


# *AN ANALYSIS OF FOREIGN MILITARY SALES FOLLOW-ON LOGISTICS SUPPORT AND INDUSTRY'S FUTURE ROLE*

THESIS

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The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

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Curtis L. Wilken

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## Abstract

This research describes how Foreign Military Sales follow-on support will be provided for in the future based on changes currently taking place in the Department of Defense, Air Force, and industry today. Information on the current system was gathered through a thorough review of the literature. Interviews were used extensively To determine the future plans of industry. In the Department of Defense, outsourcing and privatization, most notably depot privatization will affect the way that follow-on support is provided in the future. Due in large part to shrinking arms sales, private industry is increasing the emphasis placed on providing follow-on support through commercial contracts as a means of generating income and keeping production lines viable. Third-party companies have emerged as an important entity in the follow-on support field, providing specialized support to the Air Force, private industry, and foreign customers. The Air Force and private industry each have their own advantages and disadvantages in providing follow-on support. The findings conclude that follow-on support will be increasingly provided through Air Force outsourcing and privatized programs, and that private industry is seeking to increase its participation in the follow-on support arena.

*AN ANALYSIS OF FOREIGN MILITARY SALES*

*FOLLOW-ON LOGISTICS SUPPORT*

*AND INDUSTRY'S FUTURE ROLE*

# I. Introduction

## Background

Events taking place today in the Department of Defense (DoD) and commercial industry will shape the way that Foreign Military Sales (FMS) follow-on support is provided in the future. Affecting FMS follow-on support is the push for Outsourcing and Privatization (O&P) within the United States Government (USG), DoD, and the United States Air Force (Air Force). In addition, growth of third-party logistics providers and a defense industry more willing to provide commercial support for its weapons systems will affect the future of FMS follow-on support.

**Security Assistance.** Security Assistance (SA) is one of the primary methods used by the United States (US) to further foreign and national security policy interests. SA encompasses many programs, ranging from economic support to peacekeeping operations, and FMS. President Truman's 1949 inaugural address complemented the existing Truman Doctrine and established SA as an important US foreign policy tool. The following is a quotation from his address.

> In the conduct of foreign relations, the United States, like every other state, is concerned primarily with the achievement of those objectives of national interest which it conceives to be of paramount significance. If the management of our external affairs is to enjoy rationality, it must have goals that harmonize with, and supplement, the internal policies and programs of the Government, whether they be the promotion of commerce and trade, the acquisition of territory or power, or the maintenance of peace and security. (Defense, 1994)

This marked the first time that foreign policy dominated an inaugural address. Since 1949, every administration has left its own mark on foreign policy. Throughout, SA has remained an important component (Defense, 1994).

**Foreign Military Sales.** FMS is a program through which eligible countries purchase defense articles, services and training from the USG. The foreign country pays a surcharge associated with the various services, which is used to fund all USG costs associated with the sale. One important aspect of the FMS program is the task of providing follow-on logistics support for weapons systems sold to FMS customers (Defense, 1994).

**FMS Follow-On Logistics Support.** Once a weapons system has been purchased by a foreign country, arrangements for the follow-on logistics support, also known as follow-on support, must be made. Follow-on logistics support is designed to maintain a weapons system in an operable condition, or modify a system after it has been sold (Defense, 1994).

Within the Air Force, follow-on support is managed by the Air Force Security Assistance Command (AFSAC). AFSAC is responsible for the management of all follow-on support that is provided by Air Force Materiel Command's (AFMC), Air Logistics

Centers (ALCs) (Defense, 1994). AFSAC presently manages the follow-on support requirements for over 80 countries.

The FMS program was designed to make it easier for the FMS customer to arrange follow-on support because the country has to deal with only one agency--AFSAC (Defense, 1994). Of course, the FMS customer has options for obtaining follow-on support other than through the FMS system. In addition to the FMS system, the most common forms of follow-on support, those on which this research focuses are direct commercial sales (DCS) support and third-party support.

**Direct Commercial Sales.** A direct commercial sale refers to after-market support, contractor support, commercial support, and direct support. DCS support exists when the FMS customer decides to obtain follow-on support directly from the original equipment manufacturer (OEM), or other commercial supplier instead of through the FMS system. Follow-on support items sold under commercial contracts must be licensed under the Arms Export Control Act (AECA) (Defense, 1994). This restriction prevents some items from being included in follow-on support. DCS can be chosen for any number of reasons. Generally the commercial support option will yield more flexible and responsive support than the FMS program.

**Third-Party Logistics.** A third-party logistics provider is essentially a company that provides one or more of the logistics functions for a company. Third-party companies often specialize in a few key logistics functions (Robeson, 1994). Services important to follow-on support include transportation, freight forwarding, and inventory management. In the case of FMS follow-on support, the third-party provider can work under contract

for the USG, the OEM, or the FMS customer. In each case, the third-party provider performs specific logistics functions such as transportation or inventory management.

**Outsourcing and Privatization.** The entire USG is under increasing pressure to downsize. In 1995, Donald Rumsfeld, former Secretary of Defense under President Ford, and former CEO of G.D. Searle & Company, testified before Congress on the subject of privatization. He stated that government needs to get back to its core business, one of which is national defense (Rumsfeld, 1995). With the collapse of the Soviet Union and the end of the cold war, the pressure for privatization has rapidly extended into the DoD.

The DoD is considering O&P alternatives, where possible, to reduce size and save money. Privatization efforts in the DoD extend across all functions. Examples within the DoD include privatization of military construction, utilities, and morale and welfare services (Hamlin, 1990; Vines, 1992). Current discussion of privatization extends into the DOD's depot system, where much of the FMS follow-on support is currently provided. The debate in the depot arena involves the greater use of private contractors to accomplish work traditionally done in depots. A brief review of depot workloads concluded that many of the tasks done by the depots are similar to tasks handled competitively in the private sector. Both cost savings and performance improvement are cited as potential benefits of depot privatization (Congressional Budget Office, 1995; Camm, 1993). Recently, calls for O&P include a 26 February 1996 memorandum to the service secretaries, where Deputy Secretary of Defense Dr. John White wrote:

> We are committed to maintaining a ready force. This commitment will require, as [currently] planned, increased funding for the modernization of our equipment and systems. *Outsourcing and Privatization provides a means to achieve this important objective* (emphasis added). By drawing on the abilities of the commercial sector, we can provide more efficient and effective support, focus our efforts on what we do best, and redirect substantial resources to modernization. (Department, 1996)

AFMC Commander, General Viccellio, stated at a 23 February 1996 meeting with industry representatives, "I hear loud and clear the call for more privatization." He proceeded to identify $204 million in contracts that would be let by the end of 1996 to keep O&P efforts rolling (Fuqua, 20 December 1995). While the privatization work promised by General Viccellio is not directly related to FMS follow-on support, it demonstrates the willingness of the Air Force to outsource depot work, where much of FMS follow-on support is done, and clearly illustrates the future O&P trend within the Air Force.

O&P efforts within the Air Force, combined with future changes in how industry supports its weapons systems, will be the primary factors that affect how follow-on support is provided in the future.

## Research Objective

The research objective is to describe how follow-on support could be provided by private industry in the future based on changes taking place in the DoD, Air Force, and private industry today. Specifically, the research focuses on past O&P efforts affecting follow-on support, current O&P initiatives, and future plans of industry that will impact FMS follow-on support. The research questions provide the necessary historical

perspective and current information on industry's future plans to offer credible conclusions.

## Research Questions

The research questions are designed to provide the necessary information on FMS follow-on support and its related subjects. The answers lead to a comprehensive understanding of FMS follow-on support and an answer to the research objective.

Question 1. What essential functions of FMS follow-on support does AFSAC provide its FMS customers?

Question 2. What FMS follow-on support functions have previous O&P efforts undertaken within the Air Force?

Question 3. What FMS follow-on support functions does industry currently provide?

Question 4. What functions of FMS follow-on support does industry plan to provide in the future?

## Scope and Limitations

The focus of the research is primarily limited to the study of follow-on support provided to Air Force FMS customers, O&P efforts within the Air Force, and industry's plans for providing FMS follow-on support in the future. Specific industry plans are proprietary information and are closely held. However, industry personnel were willing to talk in general terms regarding follow-on support and future directions in industry.

Follow-on support efforts by the other services and industry efforts targeted at the other services are not of primary importance.

## Summary

This chapter establishes the focus of this research effort. SA is an important part of our national security strategy. The FMS program is an important component of SA. It follows that providing follow-on logistics support is an important component of the FMS program. Increased O&P initiatives in conjunction with the future direction of industry will alter the way FMS follow-on support is provided in the future. This thesis attempts to shed light on how FMS follow-on support is provided in the future.

## Thesis Organization

The remaining chapters support the importance of the FMS program, and O&P efforts, specifically O&P efforts in the area of providing follow-on logistics support to FMS customers. Chapter II, Literature Review, explains in detail the current state of O&P and the recent history of O&P programs in Air Force FMS follow-on support. Chapter III, Methodology, presents the methodology used to gather information required to answer the research questions. Chapter IV, Findings, presents the results of the original research on industry's future plans for FMS follow-on support. Finally, Chapter V, Conclusions, provides the conclusions and summary of the research.

# II. Literature Review

## Introduction

This chapter provides a background on the important topics surrounding FMS follow-on support. The concept of follow-on support is then fully explained. This explanation is necessary in order to compare the FMS follow-on support and commercial methods of providing follow-on support. A brief history of nonstandard item follow-on support is provided to show the progression of privatization within the Air Force FMS program. This chapter will provide the necessary information to answer research question one and two.

## Outsourcing and Privatization

Following the advice of Dr. White, the Deputy Secretary of Defense, the Secretary of the Air Force and Air Force Chief of Staff initiated the Air Force Outsourcing and Privatization Program to identify O&P candidates, reemphasize earlier O&P successes, and maximize the potential of future O&P efforts throughout the Air Force. To support the program, an O&P office, AF/LGM-1, was created and an O&P Integrated Process Team (IPT) was formed to manage O&P initiatives and integrate an Air Force-wide effort for meeting strategic O&P goals. The Air Force O&P program has two broad goals:

a. Goal 1: Achieve improved performance, normally without extra costs, by doing business more efficiently.

b. Goal 2: Generate savings for modernization through the increased efficiencies.

Potential O&P candidates in the area of logistics include intermediate and depot level maintenance, material management, transportation, and wholesale and retail supply (OSD, 1996). Privatization of DoD and Air Force logistics functions is important to FMS customers because the logistics infrastructure also provides FMS follow-on support. O&P initiatives in the logistics areas will most certainly lead to FMS customers receiving more follow-on support from programs such as PROS.

In the FMS arena, various amounts of nonstandard item follow-on support have been outsourced since the 1970s. However, the privatization push has never been as strong as now. Concerning depot privatization, the DoD stated the following in a report prepared for Congress:

> Privatized (formerly organic) facilities also constitute [along with the OEM] a potentially attractive contract source to address many depot maintenance requirements. Properly managed and organized, these facilities can support a wide range of requirements which normally would be accomplished by the DoD's organic facilities at potentially lower risk due to the transfer of existing government facilities, equipment, and personnel. (Fuqua, 8 April 1996)

The objective of the Air Force depot maintenance O&P effort is to "maintain or improve support to the warfighter while obtaining the best value for the Air Force." O&P initiatives are the Air Force's primary method for sizing the depot infrastructure down to the forecasted core size (OSD, 1996). Because a large part of FMS follow-on support is provided by the ALCs, depot privatization is one O&P initiative that is certain to affect FMS follow-on support. The final composition of the ALCs will determine the amount of follow-on support that can be provided organically and how much will be supported by O&P programs such as PROS, or the privatized ALCs.

The Nonstandard Item Parts and Repair Support (NIPARS) program outsourced nonstandard item follow-on support for FMS customers. It was replaced in December 1995 by the Parts and Repair Ordering System (PROS). PROS was expanded and now can support some standard items as well (SOW, 1995). The PROS program has essentially privatized the purchasing function of follow-on support for nonstandard items and some standard items. Other follow-on support functions are managed by AFSAC and the ALCs. Depot privatization in conjunction with other O&P initiatives will provide more opportunities for companies to enter the follow-on support field.

Experts on the issue of privatization agree that the DoD should cut back to its core business. Leaders within the Air Force understand the value of privatization, as witnessed by the creation of the O&P program. Providing spare parts to FMS customers certainly is not a core business of the Air Force, and it meets the requirements of an O&P candidate.

## Security Assistance

The FMS program falls under a larger program known as Security Assistance. SA is a comprehensive program that includes both military and nonmilitary support to other nations. The US offers security assistance to strengthen friendly nations, promote regional security, and support developing democracies (Defense, 1994). There is no clear definition for SA. Different government components view it according to how it affects them. Security Assistance is defined by the DoD in two primary documents. The first is published in Joint Pub. 1-02, which defines SA as follows:

> Groups of programs authorized by the Foreign Assistance Act of 1961, as amended, and the Arms Export Control Act of 1976, as amended, and other related statutes by which the United States provides defense articles, military training, and other defense related services, by grant, loan, credit, or cash sales in furtherance of national policies and objectives. (Defense, 1994)

This research focuses on the process of providing follow-on logistics support to FMS customers.

## Foreign Military Sales

The FMS program to provides designated foreign countries with assistance in the purchase and support of weapons systems, services, and training from the USG. The AECA lists what items can be sold under FMS:

a. Defense Articles (DA)

b. Excess Defense Articles (EDA)

c. Major Defense Equipment (MDE)

d. Significant Military Equipment (SME)

d. Defense Service

e. Design and Construction Services

f. Training

The details within each major category are defined by the AECA.

To initiate an FMS deal, a foreign country and the USG sign an agreement, which is normally documented in a Letter of Offer and Acceptance (LOA). Each LOA is commonly referred to as a "case" and is assigned a unique code for management purposes (Defense, 1994). It is not the Air Force's responsibility to sell weapons systems.

However, once a weapons system has been sold to a foreign country, arrangements for the follow-on support must be made. The Air Force becomes involved in the managing of follow-on support.

## FMS Follow-On Support

As stated earlier, an FMS customer can obtain follow-on support apart from the Air Force logistics system, primarily by DCS or a third-party provider. Chapter IV details that process. The remainder of this chapter focuses on FMS follow-on support functions and the Air Force FMS follow-on support system.

Within the Air Force, the Air Force, AFSAC is the agency responsible for managing the follow-on logistics support for Air Force FMS customers. The FMS program allows FMS customers to obtain follow-on logistics support for weapons systems directly from the DoD (Pugh, 1992). Furthermore, it provides FMS customers with a single point of contact for the management of FMS follow-on support requirements.

Follow-on support is more extensive than supply support. Supply support entails maintaining a stock of spares and reparables. Follow-on support includes supply support and the following:

a. Publications

b. Maintenance

c. Training

d. Support Equipment

e. Munitions

f. Modifications

g. Technical Assistance

h. Petroleum, Oil, and Lubricants (POL)

The following is a description of primary follow-on support functions within the Air Force. These functions form the basic requirements for a comprehensive follow-on support program.

## FMS Follow-On Support Functions

Once an FMS case has been established and the weapons system delivered, the task of follow-on support begins. The DoD does not maintain a separate logistics system to support FMS follow-on support. FMS cases supported by the DoD use the existing DoD logistics infrastructure. International Logistics Control Offices (ILCOs) are the military services' organizations responsible for the overall management of the FMS program.

**International Logistics Control Offices.** The ILCO is the FMS customer's single point of contact for the management of FMS follow-on support. AFSAC is the Air Force's ILCO. Although AFSAC does not own any of the FMS follow-on support functions, it is responsible for managing them. AFSAC is an Air Force FMS customer's single point of contact for receiving FMS follow-on support. Foreign Liaison Officers (FLOs) often work directly in AFSAC. The FLO is an FMS customer's official representative, whose job is to manage or monitor their country's SA programs, including FMS (Defense, 1994).

FMS follow-on support is further divided into cases, which specify the details of how follow-on support will be provided. The different FMS cases are defined order cases, blanket order cases, cooperative logistics supply support arrangements (CLSSA), life-of-type buys, and non-standard item support (Defense, 1994).

Defined Order Case. The defined order case is an LOA that specifies line-by-line what follow-on support services are required and what the cost will be. Only services listed on the defined order case are provided. Defined order cases can be used to purchase all types of follow-on support (Defense, 1994). Defined order cases are often used to purchase the initial follow-on support items in conjunction with a weapons sale. They are also used to request follow-on support requirements that do not fall into the other categories, such as additional training that was not covered under an initial purchase.

Blanket Order FMS Case. The Blanket Order case is an agreement between the FMS customer and the USG for a specific category of follow-on support items or services. The case specifies a dollar limit against which orders may be placed without specifying which items are required (Defense, 1994). For instance, a country may set up a blanket order case for consumable item support. Under the case a country can order any combination of consumables required up to the dollar limit of the case. Blanket order cases cannot be used to purchase SME, MDE, explosive ordnance items, commercial type material, technical data, and non-MDE excess defense articles (Defense, 1994).

Cooperative Logistics Supply Support Arrangement. The CLSSA is an FMS agreement for the supplying of secondary follow-on support items from the US logistics systems to an FMS customer in support of a specific weapons system or end item. The CLSSA program can provide more timely follow-on support because the CLSSA participant becomes a partner in the Air Force supply system. CLSSA support is further broken down into two Foreign Military Sales Order (FMSO) cases.

FMSO I is also known as stock level case. This program defines the FMS customer's follow-on spare requirements to be held on-hand or on-order by the Air Force or Defense Logistics Agency (DLA). FMSO I gives the Air Force and DLA the authority to purchase and store items in anticipation of demands by the FMS customer. FMSO I items are restricted to spares and repair parts stocked by the Air Force and DLA.

FMSO II is also known as requisition case. This program allows the FMS customer to order spares and repair parts as they are consumed. Both FMSO I and non FMSO I items may be requisitioned under FMSO II. The payment under FMSO II will be used in most cases to restock the support items (AFSAC, 1995).

Life of Type Buys. When a US service terminates support for a particular weapons system or its components, it is standard practice to offer remaining inventories to FMS customer countries that also own the system. If this option is offered to a customer country, the country must identify the remaining spares and repair parts they want to purchase. After the final offer, no further follow-on support is rendered for that particular system (Defense, 1994).

The cases described above provide the basic means for arranging follow-on support. The type of follow-on support needed will determine the most appropriate case. If an FMS country knows exactly what it wants, a defined order case makes sense. Whereas, if a country wants all-around support, but is limited by dollars, a blanket order might be the best arrangement. CLSSA is effective for ongoing support of standard reparable and consumable items.

The basic DoD logistics organizations and processes that support FMS are described next. These basic functions are required for both standard and nonstandard follow-on support.

**Transportation.** Transportation is a basic function of logistics. Transportation is simply the movement of goods from the supplier to the customer. Transportation of FMS follow-on support equipment nearly always involves international transportation. International freight movements are more complex than domestic movements, involving special packaging, special insurance, and extensive documentation. International movements are greatly assisted by freight forwarders. Freight forwarding firms aid international movements by securing lower freight rates, handling customs requirements, and providing temporary storage for items awaiting transportation (Glaskowsky, 1992). In most cases FMS customers are responsible for all transportation from their country to the appropriate service provider and back for reparable items and from the CONUS port of embarkation (POE) to their country for consumables. Service providers will arrange for transportation from their location to the customer's designated freight forwarder.

USG policy is that the FMS customer should be responsible for as much of the transportation process as possible past the Continental United States (CONUS) Port of Embarkation (POE). The FMS customer provides retrograde transportation of reparables to the source of repair, and transportation for repaired reparables, and consumables back to its country. In rare cases, when the DoD becomes involved in transportation outside the CONUS, it becomes the responsibility of the Defense Transportation System (DTS). (Shipments of classified material are one example where the FMS system usually provides transportation.) The DTS is composed of the Air Force's Air Mobility Command (AMC), the Army's Military Traffic Management Command (MTMC), and the Navy's Military Sealift Command (MSC). The Air Force, through AMC, is responsible for air transportation between points in the US and overseas, and between and within overseas areas. The Army, through MTMC, is responsible for land transportation and common-user ports within the US and selected overseas locations. The Navy, through MSC, is responsible for all sea transportation.

In any shipment of follow-on support items, more than one command may have control. To assist in the coordination and management of the transportation flow, Military Standard Transportation and Movement Procedures (MILSTAMP) are used. MILSTAMP uses Military standard Requisitioning and Issue Procedure (MILSTRIP) procedures to record and track cargo movements throughout the DTS (Defense, 1994).

**Maintenance.** Maintenance is the upkeep of items required as they deteriorate due to use. Maintenance is intended to keep an item in efficient operating condition (Defense, 1994).

Each military service has its own procedures for maintenance. The Air Force FMS follow-on support program provides primarily depot level maintenance furnished by the various ALCs. Depot maintenance capabilities include inspection, testing, repair, modification, alteration, modernization, conversion, overhaul, reclamation, manufacture, or rebuild of reparable items (Defense, 1994). For nonstandard items, and some standard ones as well, the PROS program provides the same capabilities for the FMS customer.

**Supply.** Supply, as far as FMS follow-on support is concerned, involves the management of reparable and consumable items. Reparable items are high cost items that are more economical to repair than to replace when they become unserviceable. Consumables items are low cost items that are more economical to replace than to repair. Both items are essential to follow on support (Defense, 1994).

Inventory Control Points. The Air Force's Inventory Control Points (ICPs) are the ALCs. An ICP's role in FMS follow-on support primarily involves supporting the maintenance function of follow-on support. Today the Air Force depots are Warner Robins Air Logistics Center, Robins AFB, Georgia; Oklahoma Air Logistics Center, Tinker AFB; Oklahoma; Sacramento Air Logistics Center, McClellan AFB, California; Ogden Air Logistics Center, Hill AFB, Utah; and San Antonio Air Logistics

Center, Kelly AFB, Texas (Defense, 1994). The following table shows the different FMS weapons systems supported by the ALCs:

**Table 2-1.** ALC Support for FMS Weapons Systems

| | |
|---|---|
| OO-ALC, Ogden Hill AFB, UT | F-16, Landing Gear Components |
| OC-ALC, Okla. City Tinker AFB, OK | Engines, Instruments, Electronics, E-3, C-135 |
| SM-ALC, Sacramento McClellan AFB, CA | F-111, Electronics |
| SA-ALC, San Antonio Kelly AFB, TX | T-37, T-38, F-5, Engines, All Out Of Inventory Aircraft |
| WR-ALC, Warner Robins Robins AFB, GA | F-15, C-130, Helicopters |

Defense Logistics Agency. DLA manages the majority of consumable items in support of the entire DoD, Federal civil agencies, and FMS customers. FMS customer requisitions for consumables are transmitted to AFSAC, which forwards them to DLA for action. In addition to providing consumable item support, DLA manages the sales of certain excess defense equipment to eligible FMS customers (Defense, 1994).

**Management Information Systems.** Management Information Systems (MIS) are defined as "an information system that facilitates management control by producing structured, summarized reports on a regular and recurring basis" (Kroenke and Hatch, 1994). MIS includes the systems and procedures used to accomplish those objectives. MIS systems are used for the following within FMS:

a. Requisitions/Cancellations

b. Order Status/Tracking

c. Accounting

d. Vendor Database

e. Technical Database

f. Discrepancy Reporting/Follow-Up

Over the years the Air Force has developed systems to assist in the follow-on support mission. Collectively they make up what can be described as an MIS system. The following figure illustrates the MIS system data flow:

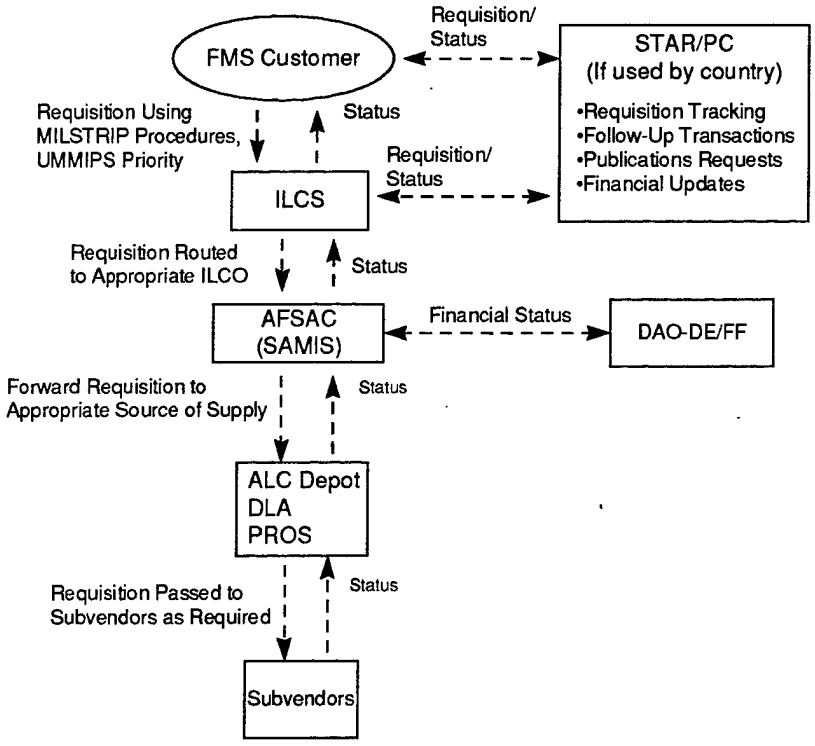


**Figure 2-1.** MIS Data Flow for FMS Follow-On Support

International Logistics Communications System. The International Logistics Communications System (ILCS) can be used to speed the requisitioning of follow-on support. ILCS passes MILSTRIP requisitions electronically to AFSAC. After AFSAC verifies the order and funding, requisitions are forwarded to the source of supply. The ILCS was developed specifically to improve logistics communication services to countries participating in the FMS program. The ILCS provides a computer-to-computer network which allows participants to exchange logistics related information with the DoD logistics community and with other FMS countries who use the ILCS. Experience has shown that countries using the ILCS receive improved materiel tracking and supply status, and requisition processing time is reduced. Furthermore, it has been shown that using ILCS reduces up to 80 percent of the communications portion of the logistics pipeline (Defense, 1994).

Security Assistance Management Information System. The Security Assistance Management Information System (SAMIS) is located at AFSAC. It is the Air Force's main information system for SA and FMS logistics information. SAMIS is not available as a whole to FMS countries. However, SAMIS data can be made available through other systems, such as STAR/PC. SAMIS is primarily used to transmit and receive FMS logistics requirements and information from AFSAC to the ALCs and PROS contractor.

Supply Tracking and Reparable Return. The Supply Tracking and Reparable Return (STAR/PC) system is available for FMS customers as an enhancement of the standard ILCS system. STAR/PC provides FMS customers a means of requisitioning items, tracking the status of requisitions, freight tracking, and financial management information. FMS customers can use STAR/PC to download data directly from SAMIS, obtaining the most current status available.

Because the SAMIS and ILCS systems are such powerful resources, and because FMS customer countries and the DoD use them for daily operations, their use was incorporated into the PROS program (PROS, 1996).

Military Standard Requisitioning and Issue Procedures. MILSTRIP is a set of procedures which sets standard forms and codes used for requisition items using high speed communications and automatic data processing (Defense, 1994). ILCS is a prime example of a system using MILSTRIP procedures.

Military Standard Transportation and Movement Procedures. The Military Standard Transportation and Movement Procedure (MILSTAMP) provides common procedures for all military services for documenting shipping information. MILSTAMP procedures are applicable to all cargo movements within the DTS system, including FMS follow-on support items (Defense, 1994).

Uniform Materiel Movement and Issue Priority System. The Uniform Materiel Movement and Issue Priority System (UMMIPS) is used to identify the relative importance of comparing requisitions in the logistics system. A two-digit code known as

a priority designator is given to each item. The priority designator is based on a combination of factors which relate to the mission of the requesting activity and the urgency of need.

The Force Activity Designator (FAD) is assigned to an FMS customer by the Joint Chiefs of Staff. FMS FADs are generally lower than Air Force FADs.

The Urgency of Need Designator (UND) indicates the FMS customer's need for the item for a particular requisition. In general terms UND "A" equates to an extremely urgent need, UND "B" to a less urgent need, and UND "C" to a routine requirement.

The following UMMIPS Matrix shows the resulting priority based on the combination of FAD and UND code of the requisition:

**Table 2-2.** UMMIPS Matrix

| FAD | I | II | III | IV | V |
|---|---|---|---|---|---|
| UND "A" | 01 | 02 | 03 | 07 | 08 |
| UND "B" | 04 | 05 | 06 | 09 | 10 |
| UND "C" | 11 | 12 | 13 | 14 | 15 |

(Defense, 1994)

**Accounting System.** An accounting system is essential to any business operation. A basic accounting system keeps track of billings and payments. Because FMS follow-on support involves actions at many locations, the means to transfer funds electronically is important.

In the FMS arena there are several types of funding, each of which comes from a separate pool of funds. The Defense Accounting and Finance Office-Denver Center (DAO-DE/FF) is the primary accounting organization for the FMS system. It manages

the flow of FMS funds through the Defense Integrated Financial System (DIFS). DAO-DE/FF manages the FMS trust fund, which is essentially an FMS customer's bank account. DAO-DE/FF also manages loan and grant money given to FMS customers by the USG. After follow-on support has been given, DAO-DE/FF must pay the provider (Defense, 1994; SOW, 1995). ALCs, DLA, and the PROS program all provide FMS follow-on support. The following figure illustrates the interactions within the FMS accounting system, the FMS customer, and the service providers:

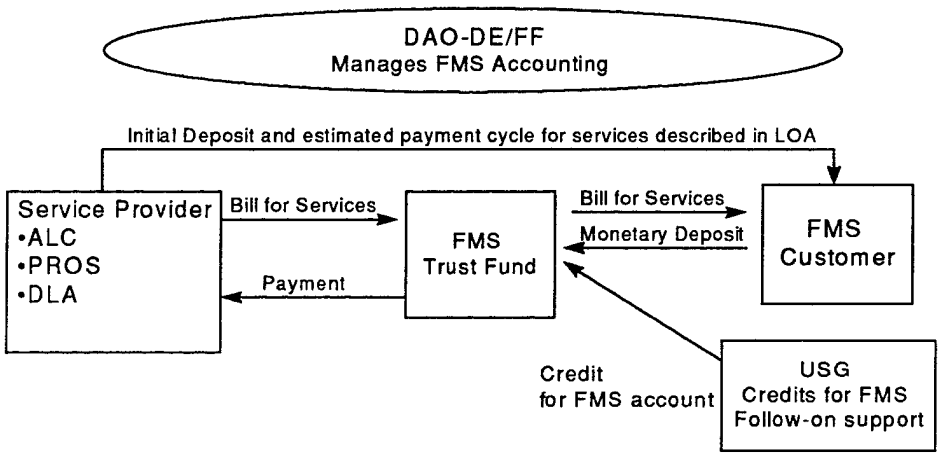


**Figure 2-2.** FMS Accounting Flow

The previous information has described the basic functions involved in providing FMS follow-on support. These functions will form the model to which O&P programs, DCS, and third-party support will be compared to when discussing their efforts in

providing follow-on support. The following figure illustrates the basic interrelationships of the functions:

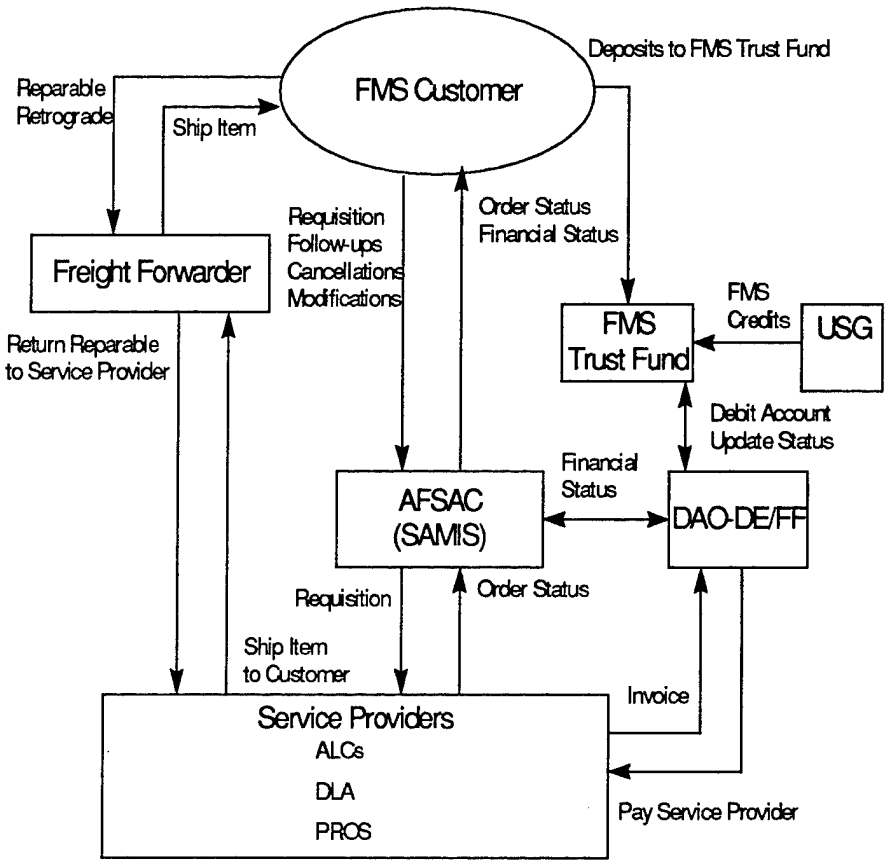


**Figure 2-3.** FMS Follow-On Support Flow Diagram

The next discussion presents a background on the evolution of nonstandard support and the Air Force's current system for supporting nonstandard items.

## Nonstandard Item Support Evolution

Nonstandard items are defined as items that are not actively managed by AFMC. Nonstandard items occur for a number of reasons. Sometimes an FMS customer desires a

nonstandard configuration designed specifically to suit individual requirements. Other times an item becomes nonstandard after the Air Force stops using the item, for example when an aircraft is retired from service. There are other circumstances that lead to nonstandard items, but the circumstances all lead to the problem of how to provide follow-on support for the nonstandard item.

Prior to 1971, there was no standardized program for handling nonstandard item requisitions. Nonstandard item support was handled on a case-by-case basis. Because the total number of nonstandard items was low, the lack of standardized nonstandard item support procedures was not seen as a problem. However, as the number of weapons sold increased, the number of nonstandard items grew, making it apparent that a better method of providing nonstandard item support was required. Nonstandard item support involves the same functions as standard item support. However, because there were no formal procedures to simplify the process of setting up a nonstandard support case, much was left to chance, which led to different FMS customers receiving different levels of support by different means (McLaughlin, 1985; Brown, 1993). The following discussion traces the evolution of nonstandard item support from its beginnings, with the Contractor Operated Depot (CONDEPOT) to today's PROS program.

**Contractor Operated Depot.** The CONDEPOT was a direct result of the Peace Hawk program which provided F-5s and follow-on support to the Royal Saudi Air Force (RSAF). The Air Force realized that the number of nonstandard items required to support this program was neither small nor temporary, and that traditional methods of providing

nonstandard support were not adequate. Under the Peace Hawk program, the Air Force contracted with Northrop Air Division (NAD) to provide contractor operated supply and repair facilities for nonstandard items. NAD would essentially run a customized depot to support the RSAF. NAD provided supply support, configuration management, material deficiency report actions, technical publications, and warehousing (Picard and Phalen, 1977; McLaughlin, 1985). The CONDEPOT system was used from 1971 to 1976. As the number of nonstandard items continued to grow, the system was again modified. The CONDEPOT program was not used by any other FMS customers, so the original problem of a lack of standardized procedures for nonstandard item support continued.

**Nonstandard Item System Support.** The Nonstandard Item System Support (NISS) program was headed under a project named PACER GONDOLA. Under PACER GONDOLA a series of nonstandard item system support procedures was developed. The NISS procedures were originally developed to support all nonstandard items. however, NISS procedures were used only for the RSAF Peace Hawk III through V program. The basic NISS procedures covered the following areas:

a. Requisition and Distribution of Items Based on RSAF Demands

b. Nonstandard Item Procurement and Manufacturing Capability

c. Cataloguing of Nonstandard Items

d. Overhaul, Repair, and Modification Capability at NAD Depot

e. Engineering and Maintenance Analysis

f. Maintain Technical Orders and Northrop Technical Manuals for RSAF F-5

g. Configuration Control

Under NISS procedures, NAD no longer provided warehousing to the RSAF. All RSAF follow-on support items that NAD was managing were transferred to the RSAF. The NISS concept was used from 1977 to 1979, when it was again modified (McLaughlin, 1985). Again, the NISS procedures developed to standardize the method of providing nonstandard item support were not used to support nonstandard items outside of the Peace Hawk program.

**Country Standard Item Support.** The Country Standard Item Support (CSIS) concept was basically an improvement of the NISS concept rather than a new concept. The primary changes included increasing NAD's responsibility by increasing the number of systems under the Peace Hawk program (McLaughlin, 1985).

**Nonstandard Item Support.** The Nonstandard Item Support (NSIS) procedures were developed concurrently under the CSIS system of providing nonstandard item follow-on support. Air Force Logistics Command (AFLC) (now AFMC) established a Non-Standard Support Study Group to determine the best approach for supporting nonstandard items. In January 1978, AFLC hosted an all-ALC conference to work on the nonstandard item issue. The conference eventually resulted in the issuance of the Controlled Multiple Address Letter (CMAL) 78-5. CMAL 78-5 supported prearranged contractual support for nonstandard systems by negotiating contracts with subsystem vendors and letting contracts for other forms of support. CMAL 78-5 was revised several times before finally being published as CMAL 79-1. The new policy became known as the

NSIS program (McLaughlin, 1985). Between 1979 and 1990, AFMC continued its review of nonstandard follow-on support. The general concept of providing nonstandard support had moved from managing requests on a case-by-case basis to CMAL procedures, which, for the first time, provided general guidance applicable to all FMS follow-on support functions, and applicable to all FMS cases. A summary of CMAL letters summarizes the NSIS period of follow-on support:

**Table 2-3.** CMAL Summary

**Controlled Multiple Address Letters - 1979 to 1985**

| CMAL | Purpose |
|---|---|
| CMAL 78-5 | Provided prearranged contractual support for nonstandard items by negotiating contracts with sub system vendors and letting contracts for spare parts procurement, depot level maintenance, T.O. verification and validation, and technical services. |
| CMAL 79-1 | Extended CMAL 78-5 providing support for provisioning P&A studies, definitization studies, cataloguing, technical orders, engineering and technical services, follow-on support item supply, depot repair, configuration accounting, and system activation manpower funding. |
| CMAL 82-1 | CMAL 79-1 was extended annually and was not incorporated into any applicable Air Force regulation consequently, CMAL 82-1 was designed to incorporate nonstandard support policies into permanent regulations. CMAL 82-1 was never implemented. |

(McLaughlin, 1985)

The program that finally replaced the NSIS system was NIPARS.

**NIPARS.** NIPARS was implemented on 14 September 1990. NIPARS was a further attempt to improve and standardize the support provided for nonstandard items. The NIPARS contract simplified nonstandard item support for AFSAC and the FMS customer countries. The requirement to establish nonstandard FMS cases was eliminated (Brown, 1993). Instead of writing a separate contract for each nonstandard item case, NIPARS established a permanent contractor-operated organization, with standardized procedures for providing nonstandard item support. Now requests for nonstandard items would not have to be negotiated for on a case-by-case basis.

A 1992 AFIT thesis by Captain de Kam and Captain Tribble established the initial effectiveness of the contractor run NIPARS program. de Kam and Tribble concluded that "NIPARS is rendering significantly improved support of nonstandard items." The findings were tempered with the understanding that NIPARS was designed to support only a portion of FMS follow-on support items, and was not a replacement for the current system (de Kam and Tribble, 1992).

In a follow-up to the de Kam and Tribble work, a 1993 AFIT thesis by Flight Lieutenant Sue Brown (Royal Australian Air Force) again concluded that NIPARS provided better follow-on logistics support for nonstandard items than did the Air Force system it replaced. NIPARS' strong point was reduced lead times; under NIPARS, the customer requisitions were filled much sooner than under the previous FMS system (Brown, 1993). The following table shows the process flow of the NIPARS program:

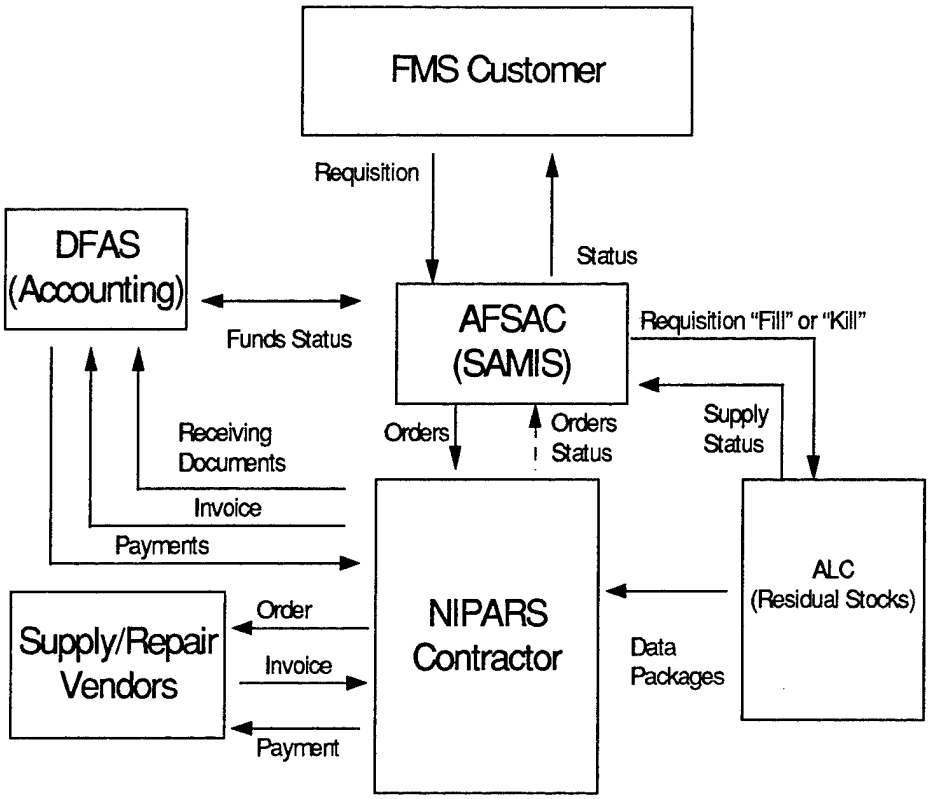


**Figure 2-4:** NIPARS Requisition Flow
(Brown, 1993)

NIPARS provided purchasing and transportation support functions for FMS customers. AFSAC managed overhead functions such as accounting, and provided contract oversight duties on the contractor.

The following figure was adapted from the Brown thesis. It was modified to show the creation of the PROS system:

| Period | Concept | Major Theme |
|---|---|---|
| pre-1971 | None | Nonstandard support provided on and ad hoc basis. |
| 1971-1976 | CONDEPOT | NAD provided most nonstandard support, to include warehousing in CONUS. Total package system approach to support weapons system sale. |
| 1976-1979 | NISS | SA-ALC draft procedures (PACER GONDOLA) for NAD-provided support of nonstandard items. Used only for RSAF Peace Hawk program. Aimed at total package support for all elements of ILS. |
| 1979-present | CSIS | Contractor-supported program for RSAF. Increased NAD responsibility for nonstandard items. Continued total package approach. |
| 1978-1990 | NSIS | Series of CMALs prescribing AFLC policy towards nonstandard item support. Continued total package approach. |
| 1990-1995 | NIPARS | Contract for nonstandard support via prime contractor and vendors. Applicable to all FMS countries and almost all cases. Concentrates on follow-on logistics support with provisions to task orders to address other logistics requirements if required. |
| Dec 1995-present | PROS | NIPARS concept expanded to include support for standard supply and reparable items in addition to nonstandard items supported by NIPARS. |

**Figure 2-5.** History of FMS Follow-on Support Policies and Programs (Brown, 1993)

The success of NIPARS combined with the increasing push for privatization led to the creation of PROS. Under the new PROS system, support was extended beyond nonstandard items to include almost all follow-on support items.

## PROS

Considering the proven success of NIPARS the program was extended and its scope expanded. The PROS contract was awarded to Science Applications International Inc. (SAIC), San Diego, CA. The contract was signed on 14 December, 1995. The base period of the contract is from 14 February 1996 through 13 February, 1998. There are three one-year option periods in the contract. The final period expires on 13 February 2001. Like NIPARS, PROS will be managed by AFSAC. Primarily as the result of customer feedback, and partly as a result of the continuing push for privatization, PROS was modified and greatly expanded in scope from the NIPARS program. The most significant change was that PROS support was extended to provide support for all spares, not only the nonstandard items. The PROS program is designed to provide a wide range of support options for FMS customers, while keeping costs as low as possible. Costs are controlled by maintaining a full spectrum of available support, but charging each FMS customer only for the support provided (SOW, 1995). The following figure shows the organizational relationships that exist between the Air Force and the PROS contractor.

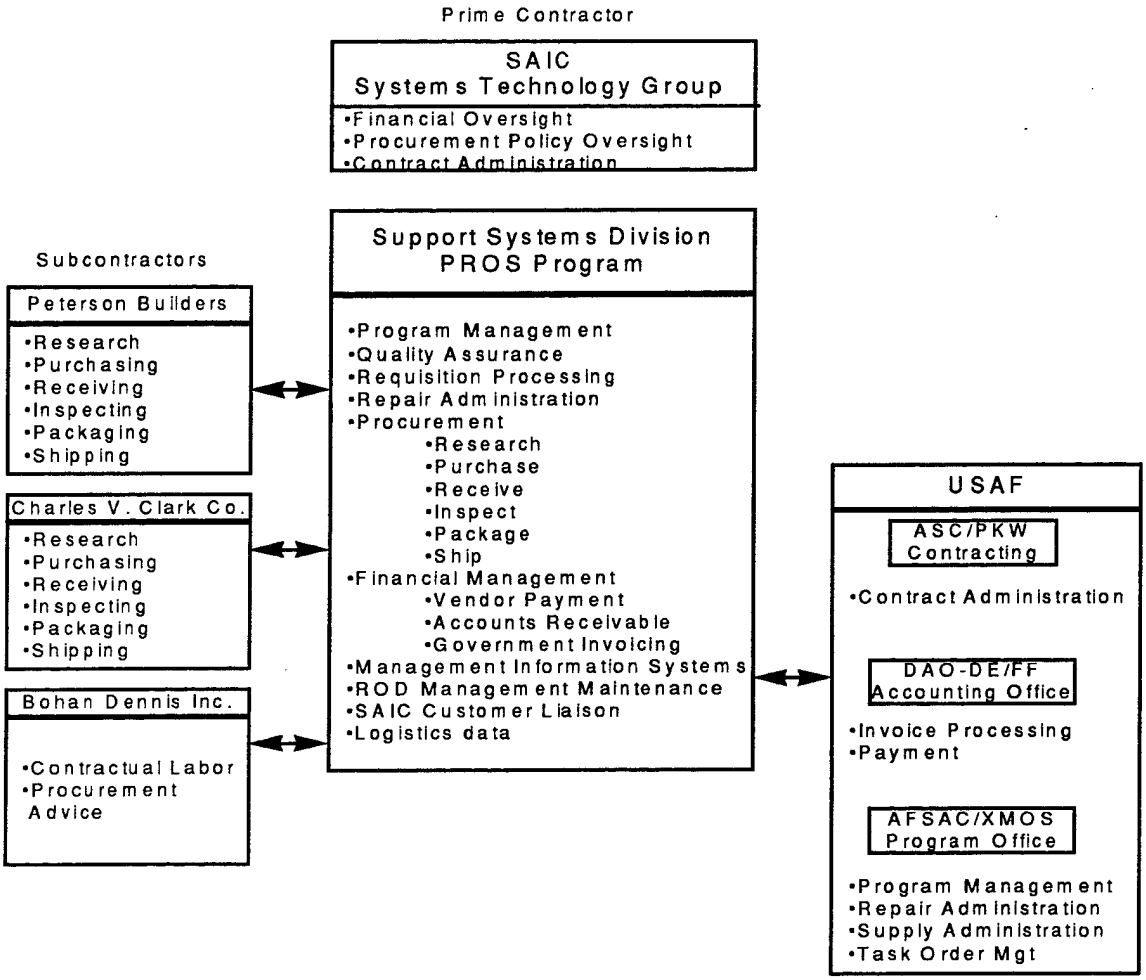


**Figure 2-6.** PROS Organization
(PROS, 1995)

**PROS Program Objectives.** The objective of the PROS program is to provide a service that becomes the preferred choice for FMS customers when selecting a method for providing follow-on logistics support. SAIC, the PROS contractor, is expected to provide exceptional customer service through a low cancellation rate. Innovative and streamlined

procedures are to be used to provide cost savings incentives to the FMS customers. An award fee plan has been implemented to motivate SAIC to perform above and beyond standards in the statement of work (SOW). Specific contract objectives include, but are not limited to:

Quality Assurance. AFSAC wants to ensure that the FMS customer countries receive high quality items from vendors which have strong quality assurance programs.

Competition. AFSAC wants to ensure that the FMS customer countries receive competitive prices, especially for items under $2,500. SAIC has established procedures to obtain maximum competition when contracting for follow-on support items under the $2,500 threshold.

Timely Contract Award and Delivery. AFSAC wants to ensure that the FMS customer countries receive follow-on support items within time frames set by the contract. It is SAIC's responsibility to ensure that delivery times are adhered to. SAIC has developed procedures to ensure that delivery times required by the FMS customer can be met.

Cancellation Rate. AFSAC wants to ensure the FMS customer countries receive a high level of service. The satisfactory cancellation rate is four percent. It is expected that SAIC will take the necessary steps to perform below that figure. Currently, the cancellation rate is well below four percent.

Innovative and Streamlined Approaches. AFSAC wants to ensure that the contractor develops procedures that encourage FMS customer countries to use the PROS program for receiving follow-on support. Program features such as quantity discounts and lot buys have been developed to provide the FMS customer countries with superior service. Wherever possible, strong data interface between AFSAC, SAIC, and the FMS customer country is encouraged to facilitate more rapid service.

Maintain Current SA Program Procedures. AFSAC wants to ensure that SAIC continues to enhance and strengthen the SA Program relationships that have been developed between foreign countries and the US. Relationships include both financial and procedural relationships that exist between the US and its FMS customers.

Transportation. It is the responsibility of SAIC to arrange for appropriate transportation depending upon the order status and composition of the item. For lot buys, partial quantity shipments are not authorized, otherwise supply and repair items may be sent in partial shipments with AFSAC approval. Transportation costs are included as part of the single selling price.

Data Interface. SAIC is required to operate and maintain the necessary hardware and software to interface with the SAMIS system, ILCS, and FMS customer countries to facilitate the rapid and accurate transmission of data (SOW, 1995).

**PROS-Eligible Items.** According to the PROS SOW "any item that is not actively managed or for which the managing activity does not have FMS organic capability or contractual supportability is PROS eligible." PROS eligible items may include any national stock numbered (NSN) part or part numbered part, included in any government or commercial database (SOW, 1995).

PROS eligible items do not include requisitions for parts for which DoD or GSA depots maintain residual stocks. Ammunition, explosive portions of cartridge actuated devices and propellant devices are not PROS eligible. Items containing ozone depleting substances and hazardous materials may be considered PROS eligible with a waiver.

Items which are held by DoD or GSA depots can be made PROS eligible if the depot activity can not support the requisition request. Reasons for being unable to meet a request include 1) requirement not listed in the current buy cycle, 2) the ALC depot unable to meet the FMS customer country's need date, 3) high USAF demand rate impedes fill action for the FMS customer country's requisition.

In support of the PROS program, Major General Smith, Commander of the Warner Robins ALC, provided his item managers with the following direction "I have chosen PROS as this center's preferred provider to support FMS requisitions...it is my intent that within 24 hours after receipt of an FMS requisition a decision [use of PROS or use of ALC] will be made to ensure positive support for our customer" (Smith, 1996). The support of key leaders, such as Major General Smith, demonstrates the Air Force's commitment to O&P initiatives.

As in NIPARS, NSN requisitions will first be routed to the ALC in charge of managing the item. If the item is in stock, and can be filled in the required time-frame specified by the FMS customer's requisition, the ALC will fill the request. If the depot cannot fill the request, the requisition will be "killed," and passed to SAMIS. SAMIS will verify that the country is eligible to receive the part and release the part for PROS to requisition.

**Additions to PROS System.** In addition to incorporating useful features of the NIPARS program, new features were developed to enhance the new system. A list of the new features follows:

Multiple Tiers of Service. Under PROS, FMS countries can select the level of service they desire for each requisition. The different service levels allow a customer to pay only for the service level provided. The following table shows the different service level categories and delivery times stated in the PROS contract. The corresponding UMMIPS category shows what the PROS service level will be according to an FMS customer's UMMIPS priority.

**Table 2-4.** Service Categories

| Level | Days to Award from requirement receipt | Delivery days from requirement receipt | Corresponding UMMIPS Priority |
|---|---|---|---|
| NMCS | 15 | 30* | 2,3,7,8 |
| Urgent | 30 | 45* | 2,3,7,8 |
| Routine | 75 | 120* | 5,6,9,10 |
| Economy | 135 | 180* | 12,13,14,15 |

*not applicable to new manufacture

If the contractor does not fill the requisition in time, the FMS customer will pay only for the service level that is actually provided.

Quantity Discount by Country. FMS countries receive a quantity discount on the fill fee paid for PROS service after reaching a cumulative material purchase level of $5 million and again at $10 million. Discounts are cumulative, and will apply to the next requisition received by SAIC. The FMS customer receives a discount on the Fill Fee which is a pro-rated fee based on the cost of an order that SAIC receives as part of its payment.

CAGE Buys. A CAGE buy consists of 2 to 10 requisitions from one FMS customer and purchased from a single source. The requisition can include any number of items supplied from the single vendor. AFSAC will group the requisitions for the purpose of a discounted processing fee, and a possible quantity discount buy. NMCS, urgent requisitions, and repair orders are not applicable to CAGE buys.

Custom Processing. Special repair and service is available upon request. It is up to the FMS customer to request the special service at the time of order. An examples of special service might include custom painting or finishing of FMS customer items.

Manufacturing Inspection Standards. When requested, ANSI 90 series or MIL-Q-9858A standards for new manufacture will be used. If no manufacturers are available that meet the requirements, the contractor will contact the FMS customer country for a decision. Where no military standards exist for an item, SAIC will provide a

part which meets or exceeds the design specifications previously set by the original equipment manufacturer.

Price and Availability. Upon request, SAIC can provide the FMS customer price and availability (P&A) data before a supply or repair requisition is input. The P&A quote is valid for 60 calendar days. In addition, if the contractor obtains a less expensive quote it is valid for 30-45 days, and that information will be included with the P&A quote provided to the FMS customer (SOW, 1995).

**Repair Process.** In addition to the follow-on support services for supplying replacement parts described above, the PROS system can process repair requisitions. The process is similar to receiving a supply item through PROS.

Any item that cannot be repaired by a USG facility is a potential candidate for repair under the PROS system. This includes items with Expendability, Recoverability, Reparability, Category (ERRC) codes that designate consumable items (N or P). Consumable items are not repaired by the ALCs, however, some FMS customers want or need them repaired. In these cases the PROS system can contract for the repairs.

As a rule the PROS system operates on a repair and return concept. That is, the FMS customer receives the same reparable it turned it after the repair has been completed. Only when the item is condemned will the FMS customer be offered an exchange reparable (SOW, 1995).

The following figure shows the process for supporting consumable and reparable items under the PROS program.

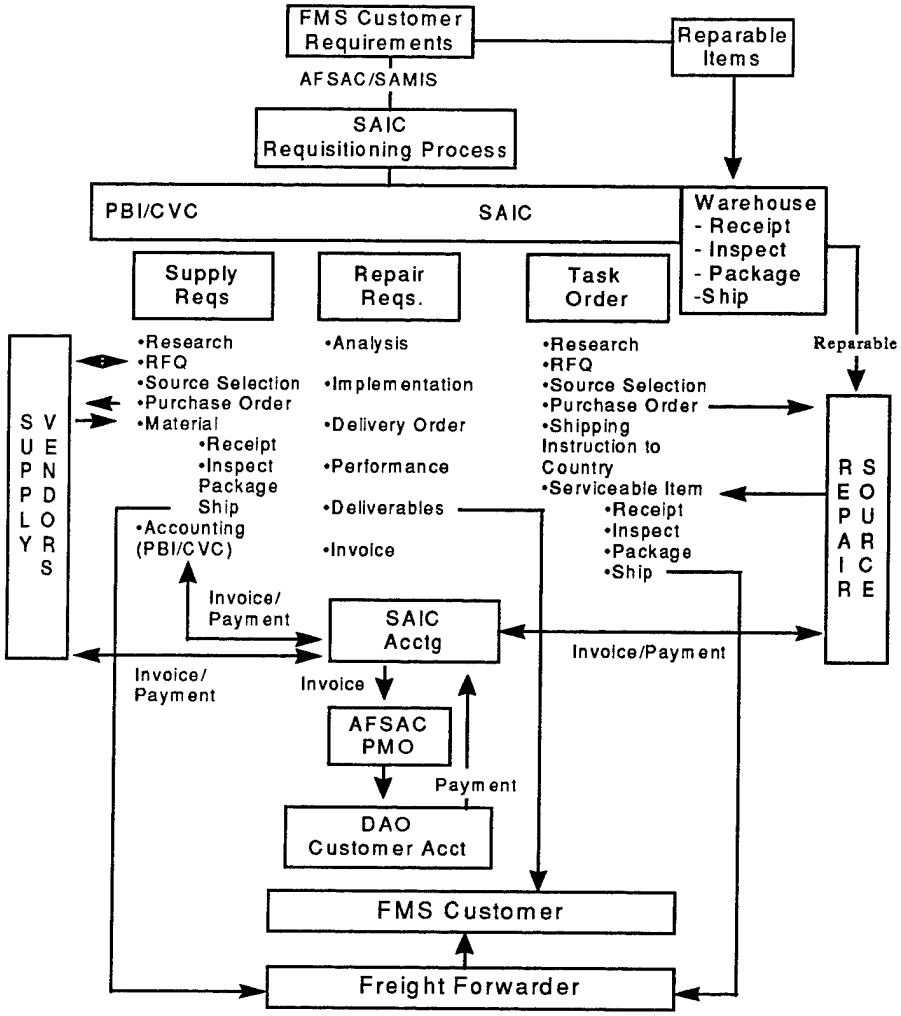


**Figure 2-7.** PROS Requisition Flow
(SAIC, 1995)

**PROS Contractor Award Fee.** The PROS contractor may receive an award fee as an incentive to perform over and above requirements in the SOW. The AFSAC Commander acts as the Fee Determining Official (FDO). The FDO chairs the Award Review Board (ARB) in the evaluation of the contractor's performance. The decision of the FDO is final and not subject to appeal.

SAIC is judged and scored according to the overall performance. The resulting score will determine the amount of the award fee. The contractor may receive up to $250,000 per quarter for superior contract performance for performance of special interest items as determined by the USG (SOW, 1995).

**PROS and Outsourcing and Privatization.** The Air Force has identified several characteristics as important for the success of an O&P contract. These include long-term performance contracts, and contracts with an incentive based on performance. Extension clauses for superior contractor performance; and increased contractor influence and control in the process, with an emphasis on "what" versus "how" support must be provided, are also part of the O&P process for making O&P live up to its claims (HQ USAF/CC, 1996). The PROS contract meets two of the goals for O&P contracting: it has incentives and extension clauses to reward superior performance. However, whereas long-term contract of up to ten years are expressed as the goal for future O&P contracts, the PROS contract is only for two years, with three possible one-year extensions (SOW, 1995).

## FMS Follow-On Support Considerations

After a foreign country has surveyed the world market and has decided to purchase from the US, the country must decide whether to obtain follow-on support commercially, or through the FMS system. The following discussion presents some considerations that the customer should take into account before deciding on a method of

follow-on support. Chapter IV discusses commercial methods of obtaining follow-on support.

**Contract Negotiations.** When a country chooses the FMS system, the contracting process is greatly simplified versus contracting for commercial support. Because the DoD does the contracting work for the FMS country, it does not have to maintain a contracting staff as large or as skilled as one required for commercial contracting. However, because the DoD must follow Federal Acquisition Regulations (FAR), the FMS system cannot be as flexible as the commercial system.

**One-Stop Shopping.** The FMS system is the only current system that can provide one-stop shopping for all follow-on support needs. For Air Force customers, AFSAC is the single command responsible for FMS follow-on support. The PROS program further ensures continued support for nonstandard items, and some standard items as well. The benefit of having a single point of contact for FMS follow-on support is magnified by the number of different manufacturer's equipment that an FMS customer owns.

**Speed.** The FMS system does not generally provide supply support as timely as can the OEMs. FMS customers receive supply support from the same depot structure that supports the Air Force. FMS countries do not share the same priority for repair that Air Force units maintain. In the area of nonstandard item support, the privatized PROS program provides better support than the FMS system did prior to PROS. However, all follow-on support items and services are not supported under the PROS program.

**Cost.** The cost of FMS follow-on support has a great deal to do with the overall sales package. However, because the USG is purchasing for the FMS customer, in conjunction with many other purchases, the USG often receives a lower price than that offered commercially. For nonstandard items the PROS program seeks to find the lowest possible price. Many provisions, such as CAGE discounts and lot buys were implemented into the PROS contract to assist in lowering final prices. No pricing study done on the PROS program to compare its prices to OEM prices.

Overall, it cannot be said that FMS prices are cheaper or commercial prices are cheaper. Many factors are included in the final price. However, under the FMS system, the FMS country can be assured of a fair price and a relatively simple process.

**Air Force and FMS Customer Liaison.** Countries that receive support from the FMS system become tied into the DoD logistics network. Military-to-military contact is standard for countries receiving support from the FMS system. Depending on the FMS customer country's viewpoint, this relationship may be seen as a benefit. In addition, Air Force FMS customers may access SAMIS to receiving the latest status on their requisitions, and other important information on their FMS program. AFSAC maintains a dedicated staff whose sole purpose is to assist the FMS customers with their follow-on support needs. In addition, SAIC maintains a facility in the Dayton area as a requirement of the PROS contract. This allows the contractor to be readily accessible to the FLOS who work at AFSAC.

## Summary

FMS follow-on support is an important part of our nation's overall SA program. The Air Force FMS program offers a complete range of services that provides one-stop shopping for FMS customers. The essential elements required to support an FMS customer include MIS, transportation, supply, maintenance, and accounting.

Early O&P efforts in FMS follow-on support grew out of a need to provide a standard method of supporting nonstandard items. O&P programs are currently used to provide some functions of FMS follow-on support, and now support standard and nonstandard items. Continuing O&P initiatives, especially depot privatization, will affect how FMS follow-on support is provided for in the future, and which organizations are involved.

It is important for a potential FMS customer to be familiar with the FMS system in order to properly evaluate it versus commercial means of support. The FMS system is not better or worse than commercial options. The best system will depend on a country's inherent capabilities, overall goals, and long-term objectives.

# III. Methodology

## Chapter Overview

This chapter introduces the research design used in this study. The methodology establishes the procedures used to answer the four research questions originally presented in Chapter I:

Question 1. What essential functions of FMS follow-on support does AFSAC provide its FMS customers?

Question 2. What FMS follow-on support functions have previous O&P efforts undertaken within the Air Force?

Question 3. What FMS follow-on support functions does industry currently provide?

Question 4. What functions of FMS follow-on support does industry plan to provide in the future?

The information obtained in answering the research questions will lead to the required information to answer the research objective.

## Data Types

For this thesis both primary and secondary data were gathered. Each source of data has its strengths and weaknesses. With primary data, the exact information desired is collected. However, many secondary data sources exist that contain the required information, and can be used without pursuing redundant data collection. A combination

of primary and secondary data is essential to ensure adequate coverage of the research topic.

**Primary Data.** Primary data sources are original and yield information intended for a specific task or study, especially to answer specific research questions. The advantage of primary data is that the exact data required can be sought, and extraneous data is more easily controlled (Emory, 1995). Primary data was gathered to answer research question two and four, although some secondary data was also found useful.

Personal interviews and telephone interviews with various industry personnel form the majority of the primary information for this thesis. An interview is simply a conversation with a purpose. Dane defines an interview as "a structured conversation used to complete a survey" (Dane, 1990). The specific type of interview used is referred to as a focused interview. The focused interview "poses a few predetermined questions, but has considerable flexibility concerning follow-up questions" (Merton, and others, 1956). Focused interviews are best suited when respondents consist of a specific group chosen for their familiarity with the research topic. This was certainly the case with the industry personnel interviewed for this research. Respondents consisted of personnel who work in various FMS follow-on support positions, many of whom had previous military experience as well.

Telephone interviews were used when face-to-face interviews were not possible, and as follow-ups of the personal interviews. The telephone interviews were conducted in the same manner as the personal interviews. In the past, the suitability of telephone interviews has been questioned. However, a 1978 study by Kleck and Luchfarber found

no appreciable difference between an identical interview conducted face-to-face and one conducted over the phone (Dane, 1990).

**Secondary Data.** A secondary data source comprises of information that was originally collected by others to be used for other purposes. Secondary data sources are easier and more economical to collect than primary data sources (Emory, 1995). Secondary data is the most common data source and constitutes the primary source of information on the history and current state of SA, O&P, the FMS program, and follow-on support.

Secondary data was primarily used to answer research question one and two, although some primary data was also gathered. The interview process resulted in additional sources of secondary data being made available for research. Secondary data comprised the majority of research for this thesis.

## Data Collection Plan

An attempt to rely on more than one research method is referred to as triangulation. For qualitative methods, such as this one, the "within-method" is used. The within-method uses multiple techniques within a given method to collect and interpret data (VanMaanen, 1983). The multiple data collection methods ensure a more complete coverage of the subject.

When searching for secondary data sources it is important to use proper and thorough search procedures (Emory, 1995). Literature for this research was obtained from numerous sources to include a DTIC, Pro Quest, and FIRST SEARCH search of key

words and subjects. The AFIT Library was used as the primary source of information. Further information was gathered from AFSAC and industry.

Primary research was conducted using personal and telephone interviews. Personal interviews were conducted primarily at the Naval Aviation FMS Logistics Process Improvement Team (LPIT) Conference (10-14 June 1996), and at AFSAC and SAIC headquarters in Dayton Ohio. Telephone interviews were conducted with representatives from companies who could not be interviewed in person. The FMS LPIT conference provided an invaluable source of company representatives who are keenly interested in FMS follow-on support and O&P opportunities.

Information obtained from this in-depth literature review assisted in documenting the current enthusiasm within the DoD for using O&P initiatives to provide follow-on support, past and current FMS follow-on support practices, and current and future industry interest in the role of providing follow-on support to FMS customers. Most importantly, the research provides insight into the future of FMS follow-on support for Air Force FMS customers.

# IV. Findings

## Introduction

Chapter two discussed the Air Force FMS system, including privatization initiatives such as PROS. The Air Force FMS system represents just one alternative for a foreign country to obtain follow-on support. The other alternative is represented by the OEMs and third-party providers. The OEMs and third party companies can provide support under an Air Force O&P program, or through a commercial means, such as DCS support. This chapter discusses the role that third-party and OEM companies play in providing follow-on support to FMS customers.

Government and defense downsizing, and increased use of O&P are providing more opportunities for the private sector to provide follow-on support. Defense contractors are pushing for more DCS contracts as a means of generating extra revenue to supplant decreasing defense budgets. Third-party logistics providers are used by all players in the follow-on support arena, and their use will continue to grow. The following companies are a sample of OEMs and third-party companies involved in providing follow-on support to FMS customers.

## Industry and FMS Follow-on Support

**Allied Signal.** Allied Signal is a worldwide technology and manufacturing company involved in aerospace, automotive products, fibers, plastics and advanced materials. Allied Signal employs over 77,000 personnel worldwide (Allied, 1996).

Current Support. Allied Signal currently supports numerous FMS systems, primarily Auxiliary Power Units (APUs), military helicopter engines, wheels and brakes, marine propulsion engines, and a wide array of avionics. These systems are produced under four separate business units within the company (Allied, 1996). Allied Signal systems are often components on an aircraft that is built by a company such as Lockheed Martin. In many cases, Allied Signal acts as a subcontractor, providing support to the prime contractor, and the prime contractor acting as the FMS customer's single point of contact for follow-on support. In other case, aircraft upgrades for example, FMS countries will go directly to Allied Signal to complete an avionics upgrade and provide the subsequent follow-on support. To coordinate the various follow-on support requirements, Allied Signal created the Marketing Sales & Service (MS&S) organization.

The MS&S organization provides all of Allied Signal's customers, FMS and commercial, with a single point of contact for support of Allied Signal equipment (Allied, 1996). From the customer standpoint, Allied Signal offers one-stop shopping for FMS follow-on support. Allied Signal offers supply support, publications, maintenance, training, technical assistance, modifications, and support equipment for all of its FMS sales. Allied can provide these services through a prime contractor, or directly to the FMS customer.

One function of follow-on support that is attracting Allied Signal's attention is Maintenance Repair and Overhaul (MRO). In the past MRO work was often done by third-party repair companies. Allied Signal's Director of Military Customer Support, Mr.

Bud Farrington, pointed out that, due to fewer weapons systems being sold, the OEMs are becoming more interested in pursuing MRO work as an additional source of work and income (Farrington, 1996). Recent MRO business includes a commercial contract with the Spanish Air Force, using Allied Signal to retrofit the automatic flight control subsystems and mission management subsystems of 12 C-130 aircraft. After the upgrade is complete, Allied Signal will provide follow-on support directly to the Spanish Air Force (Farrington, 11 June 1996; MRO, 1996).

According to Mr. Farrington, the OEM can provide more flexible and responsive customer support than can the FMS system. Furthermore, maintaining a warm OEM manufacturing base has benefits for the aerospace industry beyond being able to provide follow-on support. If the US is to maintain a viable defense industrial base, OEMs must become more involved in providing follow-on support (Farrington, 11 June 1996).

Future Plans. Mr. Farrington sees greater industry participation in the follow-on support role as inevitable due to the combination of DoD and industry downsizing. Current duplication of capabilities is no longer affordable as new weapons system development slows. He sees a hybrid logistics system of government-industry partnerships, with the OEMs responsible for work that is currently being provided by the depots, such as inventory, repair and overhaul. The role of providing follow-on support will be provided by industry and the DoD working together as an integrated team as opposed to each offering similar capabilities competing against each other (Farrington, 1996).

The trend that Allied Signal sees and expects to continue is FMS customers seeking out the OEM for upgrades and future follow-on support. This is in large part due to the unresponsiveness of the FMS system. This is supported by the fact that military after market support is one of the fastest growing areas in the company (Farrington, 1996).

Allied Signal is definitely interested in pursuing the increasing opportunities that OEMs will have, both by pursuing increased DCS contracts and by participating in DoD privatization initiatives.

**Booz Allen & Hamilton.** Booz Allen & Hamilton is a global management and technology consulting firm. It is a privately held company employing over 5,000 personnel worldwide. Its role in follow-on logistics support is that of a third-party logistics provider (Booz, 1996).

Current Support. Currently, Booz Allen & Hamilton provides third-party services to replace or augment portions of the DoD FMS system. Its largest FMS follow-on support contract to date is worth up to $26 million to develop and implement a Material Management/Inventory Control System for the Egyptian government (Lerch, 1995). The contract was awarded by the Army Security Assistance Command (AFSAC equivalent for US Army). In addition, Booz Allen Hamilton teamed up with VSE to form the "BAV" team to support the transfer of Navy ships to FMS customers. BAV is under a ten year contract to provide all functions of follow-on support to FMS customers for about 100 transferred Navy ships (Weber, 1995).

Booz Allen & Hamilton does not support any Air Force O&P initiatives related to FMS follow-on support. However, Booz Allen & Hamilton is aggressively seeking O&P contracts as they become available, including Air Force O&P opportunities. The company's expertise is in the areas of defense weapons systems and intelligence, environment and energy, international projects, integrated systems, communications and transportation, all of which have some level of FMS follow-on support requirements (Booz, 1996; Winn, 14 June 1996).

Booz Allen & Hamilton does not necessarily offer one-stop shopping. Instead, the company provides specified follow-on support services according to a contract. For example, Booz Allen & Hamilton can provide inventory and repair services for an FMS customer for a specific weapons system that is not supported under FMS.

Future Plans. In the future, Booz Allen & Hamilton seeks to increase its role in providing follow-on support, primarily by seeking additional O&P contracts such as the Navy's FAST-Line program (Winn, 14 June 1996). In addition Booz Allen & Hamilton will seek opportunities as a third-party provider as a substitute to the FMS system. The follow-on support functions provided would be up to the customer. However, Booz Allen & Hamilton's strengths are in transportation management and MIS systems (Booz, 1996; Winn, 14 June 1996).

**Lockheed Martin.** Lockheed Martin is the world's largest defense contractor. Lockheed Martin presently employs over 160,000 personnel worldwide. The company is growing internationally and emphasizing its foreign markets more than ever before.

International customers now represent 15 percent of Lockheed Martin's total sales (Lockheed, 1996).

Current Support. Because Lockheed Martin supports many weapons systems, FMS customers receive support both through the FMS system and by direct support. Major Air Force FMS cases include the F-16 and C-130. New opportunities for support include further upgrades and procurement of F-16s, and the new C-130J (Lockheed, 1996). When possible, Lockheed Martin favors DCS of all Lockheed Martin OEM systems. Lockheed Martin prefers DCS because an FMS customer's needs can be better supported through a tailored follow-on support program. Furthermore, DCS gives Lockheed Martin a known level of future production, which greatly enhances future planning (Bruner, 1996).

Lockheed Martin provides complete follow-on support for FMS customers. Services include publications, maintenance, training (aircrew and maintenance personnel), spares, upgrades, and modifications. Lockheed Martin relies on the FMS customers' preferred freight forwarder to handle transportation (Lanneger, 1996).

Lockheed Martin also provides follow-on support as a third-party provider. Lockheed Martin is under a DCS contract with the Argentine Air Force to upgrade 36 A-4 aircraft. Upgrades include modifying structures, and repairing the radar and avionics. About half of the aircraft upgrades are to be completed in the US. In addition, Lockheed Aircraft Argentina (LAA) is seeking partners to expand its South American operations into a regional MRO facility for military and civilian aircraft. The facility will begin repair

work on the A-4s in July, 1996 (Finnegan, 1996). The LAA facility will allow Lockheed Martin to provide follow-on support, primarily upgrades and modifications, to other manufacturer's aircraft.

Lockheed Martin can act as a single point of contact for all FMS follow-on support functions. The MRO facility in Argentina shows the ability to provide work on other manufacturer's equipment as well. Lockheed Martin maintains the ability to provide follow-on support through commercial or FMS channels. However, Lockheed Martin prefers to provide support through commercial methods (Bruner, 1996; Finnegan, 1996).

Future Plans. In the future Lockheed Martin will continue its DCS preference for its FMS customers (Bruner, 1996). Other future plans were not discussed. However, if Lockheed Martin's current push into the third-party MRO business is successful, Lockheed Martin will be able to provide a full range of services for its FMS customers, and maintenance, repair and overhaul work for other manufacturers' equipment.

Lockheed is also pursuing depot privatization. Lockheed Martin has organized a team to examine the future business potential of the San Antonio and Sacramento ALCs, which are scheduled for eventual privatization (Lockheed, 1996). If successful, depot privatization will provide another avenue for Lockheed Martin to provide FMS follow-on support.

**McDonnell Douglas.** McDonnell Douglas is the world's third largest aerospace firm and the second largest US defense contractor. McDonnell Douglas employs over 63,000 personnel worldwide. The company remains the world's number one military aircraft manufacturer (McDonnell, 1996).

Current Support. FMS follow-on support is done through the FMS system and through DCS. The F-4, for example, is supported through the FMS system under the PROS program. The F-15 is supported under the FMS system. While not an Air Force program, the F-18s sold to Canada are supported by McDonnell Douglas' Canadian Division. The Canadian Division acts as the Canadian Air Force's single point of contact for follow-on support. The decision to support the Canadian F-18s from the Canadian division had to do with offset agreements in the initial sale. However, F-18s sold to Switzerland are supported under the Navy's FMS system (Daugherty, 1996; Davidson, 1996). These few cases illustrate the current mix of providing for follow-on support.

There are some cases where McDonnell Douglas is more expensive than the FMS system for providing follow-on support. This is especially true for out-of-production aircraft, which involve infrequent orders for small numbers of items. Follow-on support for out-of-production aircraft is left to the FMS system. However, cases like the Canadian F-18 program, which involve aircraft currently in production, can be better supported by McDonnell Douglas. (Kunkel, 11 June 1996).

That said, McDonnell Douglas positions itself primarily as an engineering and manufacturing company. The primary follow-on support functions that McDonnell Douglas are interested in is maintenance (reparables) and inventory (consumables) for items currently in production (Kunkel, 5 August 1996). Other follow-on support functions such as training, publications, and maintenance are provided, but they are given the same importance within the company as production and engineering.

Future Plans. In the future, McDonnell Douglas will continue using both direct support as well as the FMS system for providing follow-on support. However, the trend seems to be McDonnell Douglas entering more DCS contracts. A key reason cited by McDonnell Douglas for moving to more DCS is that FMS customers are increasingly demanding cradle-to-grave support, and a single point of contact for providing follow-on support when negotiating for new weapons systems purchases. This demand for cradle-to-grave support and a single point of contact for follow-on support is in large part due to experience with an FMS system that has always provided both. The customer demand for follow-on support from the outset of a program makes it easier for McDonnell Douglas to offer the extensive services required for a comprehensive follow-on support program. For new weapons system sales, McDonnell Douglas claims it can provide more responsive and flexible follow-on support for an FMS customer than the FMS system (Daugherty, 1996).

McDonnell Douglas will provide one-stop shopping for follow-on support from an FMS customer's perspective. McDonnell Douglas' expertise is in repair and overhaul of its systems. McDonnell Douglas will provide those functions directly. To provide the

other functions required for a complete follow-on support package, McDonnell Douglas may contract out such functions as transportation or inventory to a third-party company. This is the present case for out-of-production aircraft. For future support, McDonnell Douglas is evaluating the feasibility of contracting with a third-party logistics company, and is currently in negotiations with some companies to provide a full range of follow-on support options to FMS customers (Daugherty, 1996; Kunkel, 5 August 1996). An arrangement of this nature would conceivably compete directly with the FMS system and the PROS program for providing follow-on support of out of production aircraft. At this time there are no details as negotiations are still under progress.

**Mertex.** Mertex is the operating name of H&O Wilmer S.A., Inc. of Madrid, Spain. Mertex is a small minority-owned company headquartered in Dallas, Texas. Mertex operates independently of its parent company to make it easier to get the necessary security clearances required to provide follow-on support. Mertex was specifically created as a third-party company to facilitate logistical links between FMS customers and the various OEMs. Over the years Mertex has continued to expand its capabilities and services, and now provides the entire spectrum of follow-on support for both commercial and FMS customers (Mertex, 1996).

Current Support. Mertex currently assists the Navy FMS program with transportation and repair services for follow-on support. For repair services, Mertex contracts with the OEM or a certified repair facility to accomplish the work. The capabilities that Mertex has developed would easily transition to an Air Force FMS O&P

contract, or as a third-party provider working directly between the FMS customer and the OEM. Mertex provides transportation, requisitioning, MIS, and inventory functions of follow-on support.

Mertex acts primarily as a broker between FMS customers and the US aerospace industry. Mertex works with over 250 US manufacturers and suppliers including primary OEMs such as Allied Signal, McDonnell Douglas and Northrop. Mertex sources the majority of items directly from the OEM. When that is not possible, Mertex ensures the vendor complies with all DoD and FMS customer standards. The biggest current customer of Mertex is the Spanish Navy. Mertex provides reparable and consumable management support for the Spanish Navy's AV-8B aircraft and several ships. The Spanish work through their own freight forwarder to provide transportation (Mertex, 1996; Turner, 11 June 1996).

Future Plans. In the future, Mertex will continue primarily as a third-party provider soliciting FMS customers for their follow-on support business. Mertex prefers working for the FMS customer and feels it can give the best customer service by working directly for the FMS country rather than working under an O&P contract like PROS or FAST-Line.

Mertex is currently in negotiations with several FMS countries to provide follow-on support similar to what they provide to the Spanish Navy. Mertex does not hold inventory in anticipation of demand. This is primarily because the Spanish Navy cannot

afford such an option. However, if an FMS country could afford to hold inventory, Mertex has the ability to manage it (Mertex, 1996; Turner, 30 July 1996).

**Northrop Grumman.** Northrop Grumman was formed in 1994, when Northrop acquired Grumman Corporation and Vought Aircraft. The company employs over 47,000 people and had 1996 sales of almost $7 billion. In March 1996, Northrop Grumman completed its purchase of the defense and electronic business from Westinghouse, renaming it the Electronic Sensors and Systems Division (Northrop, 1996).

Current Support. FMS follow-on support is provided primarily by the Electronic Sensors and Systems Division and the Military Aircraft Systems Division. For Air Force FMS customers, Northrop Grumman supports avionics supply support, maintenance, publications, modifications, and upgrades for the F-16, E-3A, and numerous electronic counter measures (ECM) systems (Lockheed, 1996). Northrop also has a long history of providing follow-on support for its F-5, most notably the PEACE HAWK program with the RSAF. The PEACE HAWK program set up Northrop as the single provider of follow-on support for RSAF F-5s, and was an early forerunner of FMS nonstandard item follow-on support practices that would lead eventually to the PROS program.

Presently, follow-on support is provided by a mix of FMS and direct support. Northrop Grumman maintains a complete logistics organization to provide its commercial customers with one-stop shopping for follow-on support requirements. Northrop provides supply support, training (maintenance training and field training), maintenance,

and publications. Northrop also provides full support for out-of-production aircraft such as the A-7, F-5, and A-6 (Morand, 1996). Northrop Grumman prefers direct support because it guarantees a future demand for spares and support, and provides the FMS customer with faster repair cycle times than the FMS system (Morand, 11 June 1996).

Future Plans. For the future, Northrop Grumman seems to favor increasing the use of DCS. According to a Northrop Grumman Program Manager, after the recent Westinghouse acquisition is fully integrated, direct support contracts will be increasingly pursued. Northrop Grumman maintains that direct support of FMS customers is ultimately less costly for the customer, and more profitable for the firm. In addition, with direct support, service can be more readily tailored to suit the needs of an individual country (Morand, 11 June 1996). In addition to aircraft that Northrop Grumman builds, it is the principal subcontractor to McDonnell Douglas for the Joint Strike Fighter and the C-17. These aircraft represent additional sources of potential FMS follow-on support in years to come.

**Peterson Builders Incorporated.** Peterson Builders Incorporated (PBI) is a privately-owned company providing third-party logistics support to other companies and in support of DoD O&P contracts (SCT, 1988).

Current Support. Peterson Builders Incorporated is primarily a third-party provider of FMS follow-on support. Under the PROS contract, PBI is a major subcontractor to SAIC, the prime contractor. For PROS, PBI acts as a parts supplier in response to requisitions. PBI does not maintain inventory specifically in support of PROS.

Under the Navy's FAST-Line program, PBI is also a major subcontractor and performs similar functions as it does under the PROS program.

PBI provides supply support directly to Saudi Arabia for its Navy Expansion Program nonstandard procurement contract. For the Saudi Arabian program, PBI maintains an inventory of nonstandard items. For all cases PBI provides procurement and transportation capabilities. PBI also maintains an integrated procurement database to assist with acquisition in all programs (SCT, 1988; Hunt, 1996).

Future Support. PBI will provide FMS follow-on support in the future much the same way as today. PBI is tied to Air Force FMS O&P efforts for at least the next two years under the PROS program. PBI is set up to provide a full range of follow-on support services. For at least the near future, however, no great changes in direction are planned.

The biggest change at PBI is a shift in emphasis to that of becoming a single item manager. That is, PBI will offer to be the single provider of all follow-on support services for an end item, such as turbine engines used in ships. PBI will provide inventory, maintenance, publications, and the transportation functions of follow-on support. PBI does not maintain organic transportation assets, but will ship items to the customer's preferred freight forwarder (Hunt, 1996). Inventory held in support of a system would be calculated for that system based on expected use and item reliability. In contrast, some brokers hold inventory purely on speculation of future demand. A single end-item follow-

on support service in turn could be marketed directly to an FMS customer, or used by a program such as PROS.

**Rockwell International.** Rockwell International is a Fortune 100 corporation employing more than 75,000 personnel worldwide. Rockwell is primarily a technology and aerospace based corporation (Rockwell, 1996). After the eventual sale to Boeing, Rockwell will maintain the Collins Aviation & Electronics Division.

Current Support. Currently Rockwell provides follow-on support through DCS and the FMS system. The majority of the equipment Rockwell supports is avionics and communications equipment. Rockwell provides commercial support directly to the FMS customer, or as a subcontractor to the prime who is usually an aircraft manufacturer such as McDonnell Douglas.

Rockwell International provides complete supply support, training, maintenance, publications, support equipment, follow-on support for support equipment, upgrades, and modifications. In addition to providing follow-on support, Rockwell International is committed to providing one-stop shopping for its commercial customers, and provides support for a planned total lifecycle of 20 years (Jansen, 5 August 1996).

Rockwell International prefers DCS to the FMS system for several reasons. Direct commercial contracts allow Rockwell International to be much more responsive to the FMS customer than the FMS system. In addition, commercial contracts for follow-on support make it possible for Rockwell International to better plan future production,

maintain repair capability, and maintain inventory to support the commercial systems (Jansen, 5 August 1996).

Rockwell International recently received the Newark, Ohio, Depot Privatization contract. Although not directly related to FMS follow-on support, it demonstrates the ability to successfully compete for large-scale O&P contracts. The Newark depot is responsible for maintaining the entire USAF Intercontinental Ballistic Missile force and avionics repair for the Navy (Rodriguez, 1995). This contract award demonstrates that Rockwell has the resources and ability to support other Air Force O&P efforts including those that would be related to FMS.

The most significant problem that Rockwell International faces with commercial contracts is countries that do not establish and maintain a logistics pipeline. Instead they rely on the initial spares provided with the original sale. When the initial spares run out, the countries go to Rockwell desiring immediate support. If the customer is lucky, a part is in inventory or it can receive one that is under construction. Other times the requested item is procurement lead time away from being replaced (Jansen, 1996).

Future Plans. At this time, Rockwell International does not plan to change from the current strategy of providing FMS support to its customers. Rockwell will continue to support FMS customers through DCS, through the FMS system. Rockwell International prefers DCS for the reasons listed above. In the Avionics and Commercial Division, commercial sales run about twice as much as FMS sales to FMS customers (Jansen, 5 August 1996).

Rockwell International is interested in pursuing the ALC privatization initiatives for both the Sacramento and San-Antonio ALCs. Rockwell seeks to be part of a contractor team, and will specialize in supporting avionics, and communications equipment. Until the pending sale of several divisions of the company to Boeing, more details on the direction of O&P efforts are not known (Jansen, 5 August 1996).

**Science Applications International Corporation.** SAIC is the largest privately-owned technology firm in the US, employing over 21,000 people worldwide. As far as FMS follow-on support in concerned, SAIC operates as a third-party provider. In May 1994, SAIC acquired Systems Control Technology Incorporated (SCT) (SAIC, 1995; Miller 1996). At that time SCT was the prime contractor for the NIPARS program described earlier. The acquisition of SCT marked the first significant interest of SAIC in providing FMS follow-on support.

Current Support. Currently, SAIC is the prime contractor for the PROS contract. While it is too early to tell if PROS will be successful, results from the NIPARS program clearly demonstrate that SAIC was successful in reducing repair cycle times for reparables, order and ship times for consumables, and decreasing the number of canceled requisitions.

The primary follow-on support function that SAIC provides is purchasing services for reparable and consumable item support. To facilitate the requisition flow, SAIC operates an MIS system compatible with the Air Force SAMIS system. SAIC maintains an extensive network of vendors to provide follow-on support equipment and repair

services as needed. SAIC provides temporary warehousing functions for items awaiting shipment. Transportation within the US is done by standard commercial transportation companies. A freight forwarder of the customer's preference, and paid for by the customer is used for all overseas movement (Mathern, 1996).

One concern in providing follow-on support involves cooperation between SAIC and the Dallas-Ft. Worth Division (formerly General Dynamics) of Lockheed Martin. Traditionally, the Dallas-Ft. Worth Division has been extremely slow to respond to requests for quotes and delivery times are extremely long when compared to similar OEMs. In addition, Lockheed Martin's major vendors and sources are closely guarded, and they seem to cooperate in the delay tactics. Lockheed Martin does not refuse to sell to PROS, but the lack of support make it nearly impossible for PROS to use Lockheed Martin and its vendors to obtain follow-on support items. The concerns were shared with AFSAC in July of 1996. It is still too early to tell what will be the final result (Miller, 1996; Braet, 1996).

A growing concern regarding follow-on support is liability for items. In the past, when the USG provided nearly all FMS follow-on support, it handled all liability problems. However, as more functions of the follow-on support arena are privatized, it may become less clear who is liable for a defective aircraft part. In some cases brokers are used by SAIC to obtain follow-on support items. If the part is defective or counterfeit, SAIC works with the vendor and may have to absorb any loss. The question becomes, if a small company has a privatized contract and provides a faulty item, and then goes bankrupt, who becomes liable. As more companies compete for O&P contracts, the

chances of poorly financed firms entering the business increase. As more and more contractors enter the follow-on support arena, the burden of liability will shift from the USG to the contractors, and ultimately to the FMS customer. The question then becomes, who can absorb the potentail loss with the least cost to the customer, the USG or a contractor (Miller, 1996; Braet, 1996).

Future Plans. SAIC is interested in pursuing future O&P prospects that capitalize on its existing strengths of providing consumable and reparable item follow-on support for a customer. Certain depot O&P initiatives fall into this category and are currently under evaluation.

Country or case management is a new area that SAIC is evaluating as a possible candidate for future business. Case management would involve SAIC as the sole manager for either a country or a single FMS case. This task would include consumable and reparable level calculations to determine an initial operating stock for the country or case, and the follow-on management of that case (Miller, 1996; Braet, 1996).

Of all the FMS follow-on support functions, maintaining a permanent inventory is the last function SAIC is interested in. Larry Miller, Assistant Vice President Manager, Logistics Support Services Division of SAIC, stated that buying parts in anticipation of future demand does not fit in with the company's conservative culture. Instead, SAIC will continue to maintain a comprehensive vendor list of companies that do hold inventory in anticipation of future sales (Miller, 1996; Braet, 1996).

**United Parcel Service.** United Parcel Service (UPS) is the world's largest package distribution company. UPS employs over 335,000 personnel in over 200 countries worldwide (UPS, 1996). UPS maintains a sizable infrastructure of aircraft, vehicles and facilities that make it uniquely suited as a company that can transport virtually anything anywhere. UPS is using this as its competitive edge as it seeks to enter the arena of FMS follow-on support (Torzak, 31 May 1996).

Current Support. UPS is not yet actively involved in the follow-on support arena. However, UPS is widely used by other follow-on support programs to provide transportation for FMS follow-on support assets. Transportation is one function of FMS follow-on support that is needed for virtually every support transaction.

UPS is currently in negotiations with FMS customers to provide follow-on support. At this time no other details are available (Callaway, 1996).

Future Plans. UPS is attempting to enter the FMS follow-on support arena based on the strength of its worldwide distribution network. UPS will work with an FMS customer to calculate the required inventory needed to support a logistics pipeline, based on the customer's maintenance concept, flying hour program, and inventory levels. UPS provides inventory control, purchasing, warrant services, and most importantly, rapid worldwide transportation. UPS can show a customer how much money can be saved over the current system by using its services (Callaway, 1996; Torzak, 1996). UPS maintains that by shrinking the pipeline length, through rapid transportation, and reducing requisition processing times, the number of reparables and consumables required for support will

shrink. The cost savings of reduced inventory will offset the higher costs of premium transportation. This is one of the basic tenets behind the Air Force's Lean Logistics Program.

On the positive side, UPS offers the proven ability of providing rapid transportation around the world. UPS also offers related logistics services such as inventory management, purchasing, and warranty service support. The downside is that the system UPS proposes does nothing to shorten repair cycle times.

**W&W Logistics Incorporated.** W&W is a subsidiary of Fisher Scientific International. W&W specializes in defense procurement and materials management (Redling, 1996).

Current Support. W&W currently provides the majority of its FMS follow-on support work under the Navy's FAST-Line program. FAST-Line is analogous to the Air Force's PROS program for providing follow-on support. In addition, W&W is a major subcontractor to the BAV team. The BAV contact will last for at least ten years. For the BAV contract and FAST-Line, W&W offers extensive services in purchasing, materials management, and integrated supply program management (Van Etten, 1994-95; Weber, 1995).

Future Plans. In the future W&W expects to grow as both OEMs and the DoD increasingly privatize the functions of providing follow-on support. Walt Redling, Vice President of W&W, expects that other companies, primarily the major defense firms, will focus on marketing and sales while outsourcing functions such as procurement,

material handling and inventory management to companies like W&W. W&W will gain economies of scale by combining the similar functions of its DoD, private company and FMS customer bases. In addition, W&W will compete for the next PROS contract or replacement, as well as any other FMS privatization contracts that are offered. W&W has the capability to support foreign countries as a third-party provider, bypassing the FMS system. W&W cannot do this for Navy FMS customers as long as they are under contract with the Navy (Redling, 1996). However, if an FMS country needed support that did not interfere with a current contract, W&W has the capability to provide inventory, purchasing, and transportation functions of follow-on support.

### Follow-On Support Future Trends

The defense industry environment has changed greatly in just a few years. The large defense budgets of the 1980s have been dramatically reduced. The defense industry has gone through an unprecedented series of downsizings and mergers. In conjunction with changes in industry, the USG is decreasing research and design funding, and requesting fewer new weapons systems. In addition, the USG is continuing its O&P push, the most significant of which for FMS customers is depot privatization. At the same time the defense industry and the USG have been downsizing, third-party companies have been growing. In the FMS follow-on support arena, third-party companies generally operate as niche providers, specializing in a few select functions of follow-on support. FMS countries, the USG, and OEMs all use third-party companies to assist with follow-on support.

Chapter II explains how the current FMS system provides follow-on support. The following figures illustrate the follow-on support relationships between the OEMs, third-party companies, and the FMS customer for commercial support.

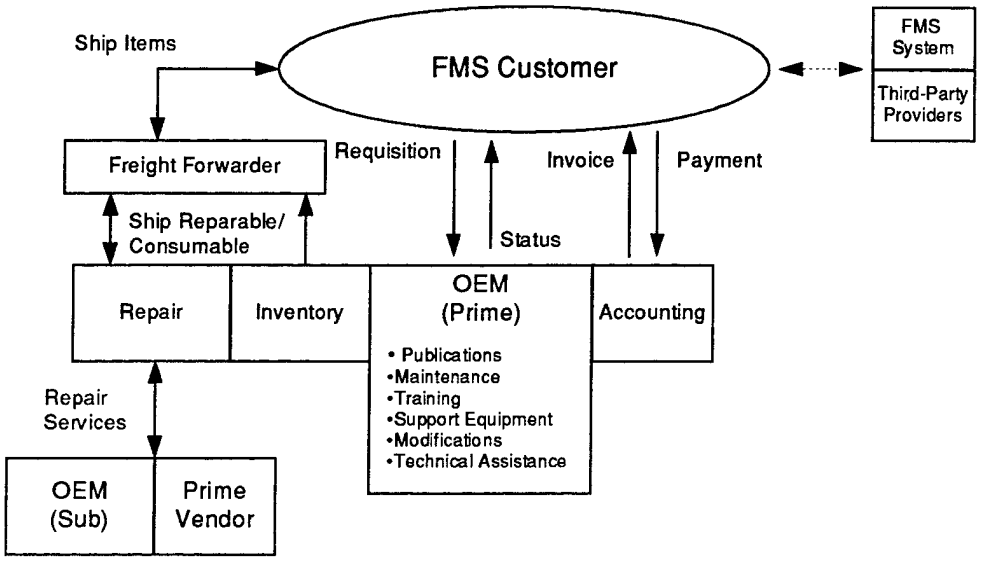


**Figure 4-1.** Customer OEM Follow-On Support Relationship

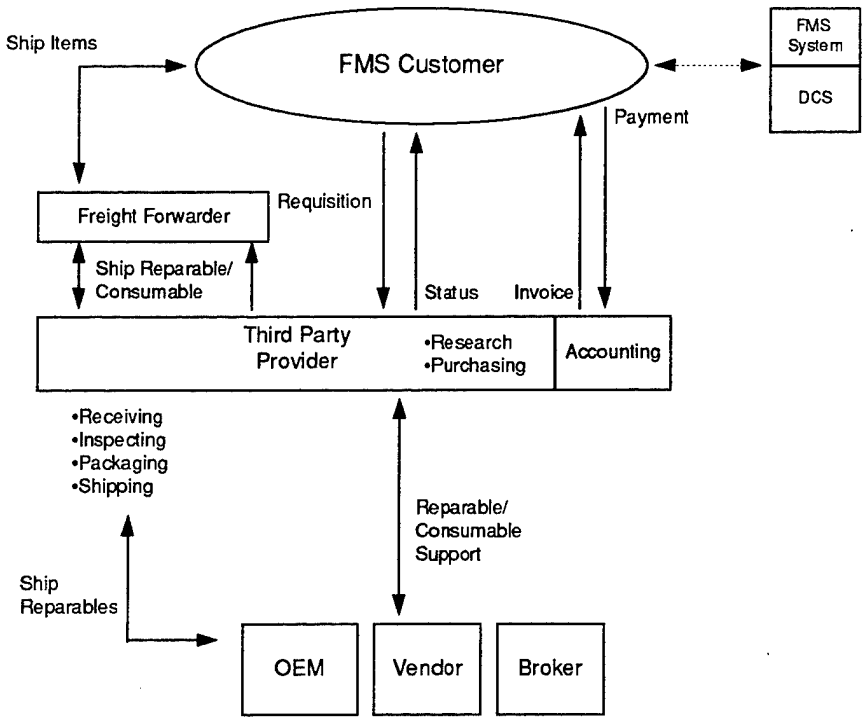


**Figure 4-2.** Customer Third-Party Follow-On Support Relationship

The following model shows a likely future based on trends happening today: additional O&P of follow-on support functions, industry participation in O&P initiatives, industry efforts to increase commercial support, and the growth of third-party providers. The three sources of support represent alternatives for the FMS customer. The FMS customer could receive support from any combination of the available sources.

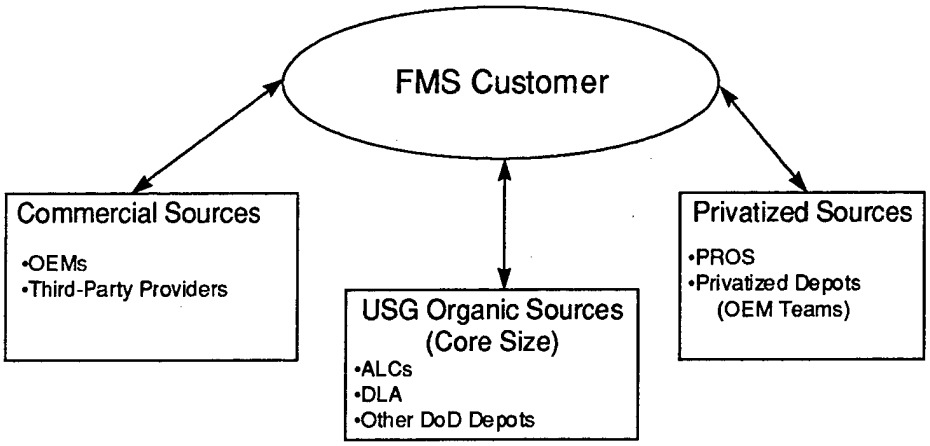


**Figure 4-3.** FMS Follow-On Support Future Model

## OEM Direct Commercial Support Considerations

Chapter two describes important considerations that a country must consider when deciding whether-or-not to obtain follow-on support from the FMS system. This section discusses similar considerations that an FMS customer should take into account when deciding direct commercial support or third-party providers to provide follow-on support.

**Contract Negotiations.** When a country enters a commercial contract with an OEM, it bears a greater burden in negotiations than it does under the FMS system. Because there is no FAR to govern the contracting process, it is up to the customer to ensure that a good deal is made. This also means that commercial support is more flexible

than the FMS system. Special financing and other custom tailoring not available under the FMS system can be negotiated under a DCS arrangement.

Because there are not as many safeguards in commercial contracting, commercial contracts are generally approved more quickly than FMS contracts. More timely contract negotiations usually leads to more timely delivery.

As a rule, countries that have experience in dealing with Western business, are knowledgeable of US laws, and know what they want, can use commercial support to their advantage. Countries that lack experience in international business or are less clear about what they want may prefer the FMS system.

**One-Stop Shopping.** OEMs can provide FMS customers one-stop shopping for follow-on support. The details of course depend on the contract that the FMS customer signed. However, most FMS customers will own equipment from more than one OEM, in addition to having systems supported under the FMS program. Therefore, even though OEMs may provide one-stop shopping, chances are that a country entering a commercial support agreement will have to deal with more than one organization to obtain follow-on support. The required number of contract administrators will vary according to the complexity of follow-on support contracts and the number of OEMs with which a country must deal.

Warren Balish, spokesman for the Aerospace Industries Association, stated that the aerospace industry as a whole is currently trying to formulate a unified industry position on privatization. As of yet, there is not an articulated statement regarding FMS

follow-on support (Balish, 1996). Today, a single OEM cannot offer one-stop shopping for all FMS weapons systems, nor does it seem to be trying to do so.

**Speed.** In most cases the OEM can provide faster supply and repair than can the FMS system. The OEMs generally maintain an inventory of follow-on support items in anticipation of demand. The FMS customer is the OEM's primary customer under a commercial contract, whereas the Air Force is the primary customer of the ALCs that provide support through the FMS system. It is in the OEM's best business interests to provide timely support and ensure customer satisfaction.

**Cost.** The cost of commercial follow-on support has a great deal to do with the overall sales package. For example, what kind of follow-on support did the country request, were there any special financing arrangements or offsets, all of which will affect the final price. Because the prime contractor must procure many components from subcontractors, the prime will charge a fee to cover costs associated with supporting equipment it does not manufacture, repair, or stock. (The FMS customer could contract directly with every sub-OEM, but that would dramatically increase the amount of contracting overhead required to support the additional contracts.) Those items may be more expensive than the same items sold under the FMS program. At the same time, competition in industry may drive the prices lower than FMS prices. Under commercial support contracts costs can vary, and it becomes the purchaser's responsibility to determine the specific costs associated with a level of support.

## Third-Party Support Considerations

**Contract Negotiations.** Considerations are similar to those for dealing with an OEM. Contracting with a third-party provider is a business negotiation. The sophistication of the country and the type of follow-on support required will be determining factors when considering a third-party provider.

**One-Stop Shopping.** Third-party companies are each different in size and capabilities. Generally, they do not offer one-stop-shopping for all follow-on support requirements. Third-party providers provide primarily supply support. Third-party companies often rely on a network of vendors to manufacturer and repair items, and purchase parts from brokers rather than maintaining an inventory and repair capability in-house. However, some third-party companies do have their own repair and inventory capability. It is up to the customer country to determine if a third-party provider can provide the desired support.

Third-party companies are often specialized in the follow-on support they provide. Some excel in providing supply support, and other specialize in upgrades, and modifications. The wide range of capabilities requires a country to perform significant research before making a decision. Most countries obtain third-party follow-on support in conjunction with other methods of follow-on support the country is already receiving, either commercially or through FMS.

**Speed.** Because third-party providers offer such a wide variety of services, and provide service to the USG, OEMs and FMS customers, it is difficult to make a generalized statement on the speed of support. Where data does exist, in the NIPARS program for example, a third-party arrangement was shown to provide quicker support for nonstandard items than did the FMS system it replaced. Preliminary results from the PROS program also indicate that PROS provides quicker support than does the FMS system. Anecdotal evidence from Mertex indicates the Spanish Navy is satisfied with the support it receives, and that the support is delivered more quickly than similar support provided by the Navy's FMS system.

Because the third-party company is in a business relationship, it must emphasize customer service. It is up to the FMS customer to determine what speed is required, and if a particular third-party company can meet the requirements.

**Cost.** Similar to the conditions under commercial considerations, cost will depend on the service desired. Third-party providers offer the best cost advantages in providing supply support for out-of-production equipment, or what the FMS system calls nonstandard items. Often, OEMs do not go to the trouble to manufacture or repair these items once they are out of production. This lack of interest by the OEMs allows the third-party company to compete for support of nonstandard or out-of-production items, whereas a third-party company cannot compete on price with an OEM for items in production.

## Summary

This chapter provides the view of a wide range of companies that provide, or plan to provide follow-on logistics support to FMS customers. Companies surveyed included the major defense contractors (OEMs) and third-party logistics providers. Third-party providers included companies operating under O&P initiatives such a SAIC, and third-party companies supporting foreign countries, such as Mertex. In addition to describing current methods of providing follow-on support, future plans were discussed. It is the future plans of providing FMS follow-on support that remains the primary interest of this research.

The OEMs have organized themselves to provide one-stop-shopping for their FMS customers. Third-party providers operate primarily as niche providers, specializing in a select few of the follow-on support functions. Depending on how many different weapons systems an FMS customer owns, it will have to deal with more than one organization by obtaining follow-on support from the commercial sector rather than from the FMS system.

The following chapter provides the conclusions of this research and fulfills the research objective by describing the future role of industry in providing FMS follow-on support.

# V. Conclusions

## Chapter Overview

A detailed presentation of SA, the Air Force FMS follow-on support program, O&P, and the current state and the future plans of industry regarding follow-on logistics support was presented earlier. Specifically, for this thesis, the future plans of industry are of primary importance. Insight into the future plans of industry was gained as the result of a thorough application of the methodology, which led to information useful for the conclusions of this thesis.

Until now, the objective of this thesis has been the documentation of information about the major topics of interest. This final chapter answers the research questions presented earlier, using the information gained during the study.

## Conclusions

This section provides the conclusions drawn from the findings of the research. The research findings and literature review provide the necessary information to answer the research questions. The answers to the research questions will assist in meeting the research objective--describing the future role of industry in providing FMS follow-on support to Air Force customers.

**Question 1. What Essential Functions of FMS Follow-On Support Does AFSAC Provide its FMS Customers?** The essential functions of FMS follow-on support include an MIS system to receive orders, track requisition status, and facilitate the

rapid and accurate movement of data between the customer and AFSAC; a transportation function that include provisions for transport to and from the customer country; an inventory system to manage consumable items; a maintenance function to manage reparable items; and an accounting function to record billings, disburse payments and provide financial status to FMS customers. Of these functions, AFSAC actually owns only portions of the MIS system--SAMIS. However, AFSAC is the central organization that coordinates the process of providing follow-on support to Air Force FMS customers. From a customer point of view, AFSAC provides one-stop shopping for FMS follow-on support.

**Question 2. What FMS Follow-On Support Functions Have Been Outsourced or Privatized?** NIPARS was the first privatized program that provided a standardized method of providing follow-on support (for nonstandard items only) to all FMS customers. The PROS program is the replacement for NIPARS, and is the current privatized method for providing some of the Air Force's FMS follow-on support. The PROS program was expanded to provide support for some standard items in addition to nonstandard items. PROS, in conjunction with AFSAC, provides the full range of FMS follow-on support functions for FMS customers. PROS provides an MIS system compatible with the FMS MIS system, transportation, warehousing, and purchasing functions.

The ALCs provide much of the FMS follow-on support for reparable items. The San Antonio and Sacramento ALCs are scheduled for privatization. A team of OEMs is

most likely to run the privatized depots. At that point, the FMS follow-on support currently provided by those ALCs will pass from Air Force control to contractor control. If industry claims regarding its ability to provide superior service are true, the FMS customer will notice an improvement in service at the privatized ALCs. However, today the exact details of the ALC privatization are too unclear to make any concrete claims regarding future performance.

**Question 3. What FMS Follow-On Support Functions Does Industry Currently Provide?** Industry currently provides all the follow-on support functions. However, for each customer the support offered will vary depending on the terms in each commercial case. OEMs provide follow-on support for their systems, but not always for other manufacturer's systems that are on the same weapons system.

Third-party providers are more specialized in the support they provide. Third-party providers usually specialize in a few of the FMS follow-on support functions such as inventory and transportation. Third-party providers are used by the USG, OEM, and the FMS country to provide follow-on support. The PROS program is a good example of a third-party company working for the USG. OEMs use third-party providers extensively for functions such as transportation. In some cases an FMS customer will hire a third-party company to take care of its FMS follow-on support requirements.

There is not a single OEM or third-party that can provide one-stop shopping for the range of weapons systems, that can the FMS system. Countries relying on OEMs and

third-party companies must rely on several OEM and third-party relationships in order to receive the same degree of support provided by the FMS system.

**Question 4. What FMS Follow-On Support Functions is Industry Interested in Providing for the Future?** Industry offers, and will continue to offer a complete range of follow-on support functions. The question is how will industry accomplish this. The trend for providing follow-on support seems to be towards one of three areas: Status Quo, Direct Commercial Support, and Outsourcing and Privatization.

Status Quo. Companies that fall into this area are distinguished by the fact that they have no plans to change the current way they provide FMS follow-on support. They may provide support as a third-party, OEM, or let the FMS system take care of follow-on support. In any event, these firms feel no need to change their current strategy for providing follow-on support.

Direct Commercial Support. Companies under this classification are changing the way they will provide follow-on support in the future. They plan to increase the use of DCS to provide follow-on support. There are several reasons for this. The FMS system has done a good job of training its FMS customers in the concepts of cradle-to-grave support and offering the convenience of a single point of contact for obtaining follow-on support. This training has led to customers demanding cradle-to-grave support when negotiating for weapons purchases. To remain competitive, firms need to be able to provide a full range of follow-on support. A 1993 report from the Logistics Management Institute determined that the defense industry could not realistically maintain its 1980s

weapons sales even when considering potential increased commercial weapons sales to foreign customers (Straight and Peterson, 1993). As new weapons acquisitions continue to decrease, commercial follow-on support provides the OEM with a source of revenue to partially offset the decline.

Outsourcing and Privatization. As the DoD continues to downsize, the opportunities for O&P contracts will increase. Currently the PROS program is the best example of an O&P contract in the FMS area. As mentioned earlier, PROS performs only a small part of the total FMS follow-on support role. It is easy to imagine the opportunities increasing in the future. OEMs and third-party providers are competing for a wide range of O&P contracts throughout the government and have expressed their interest in competing for future O&P contracts in the FMS arena.

OEMs interested in pursuing O&P initiatives are preparing to compete for Air Force depot privatization contracts, especially the privatization of the Sacramento and San Antonio ALCs. Although only two ALCs are initially being privatized, it is almost certain that several OEMs will team together to offer support. An example would be Allied Signal providing aircraft systems integration, Northrop Grumman providing airframe support, and General Electric providing jet engine support, all working together to provide the support formerly accomplished by the ALC. The sheer number of systems supported by an ALC virtually ensures that a team of OEMs will be required to provide complete support. Depot privatization should also benefit third-party providers, that will act as subcontractors to the OEM teams.

## Summary

The DoD is determined to push outsourcing and privatization options as much as possible. The current trend is for more privatization--not less. The NIPARS and PROS programs are just the beginning of O&P efforts in the area of FMS follow-on support. Industry is more than willing to support the DoD in future O&P efforts.

Many OEMs will seek to provide commercial support to FMS customers as a means of generating revenue during the future of lean defense budgets. Third-party logistics providers will most certainly flourish as they are used by all players in the FMS field. Third-party providers have already benefited from outsourcing and privatization programs such as PROS. As OEMs provide more DCS support, third-party providers will benefit because the OEMs often rely on them for assistance in providing support. The future plans of industry, to provide FMS follow-on support, can be broken down into three basic groups: status quo, increasing direct commercial support, and increasing participation in USG O&P initiatives.

Not a single OEM or third-party expressed interest, or currently possesses the capability to provide one-stop-shopping for the range of weapons systems supported by the FMS system. Countries relying on OEMs and third-party companies will have to continue to rely on several OEM and third-party relationships in order to receive the same degree of support provided by the FMS system. OEMs will push to support their own systems and third-party providers will provide more support in the future. However, the

FMS system will remain the only place where a country may rely on a single provider for all of its follow-on support requirements.

For the FMS customer, the future direction of FMS follow-on support has two important implications. One, the FMS system will continue to exist, although it will become more privatized. This means that relatively unsophisticated countries will be able to rely on the continued support of the FMS program. Two, as stated earlier, commercial support is generally more responsive and can be tailored to meet an individual customer's requirements. Sophisticated countries, well-versed in US business practices and laws, and willing to maintain several business relationships, should investigate commercial support as a means of obtaining follow-on logistics support. These sophisticated countries will be able to benefit the most from changes taking place in the follow-on support environment.

## Appendix A. Glossary of Acronyms

**AECA - Arms Export Control Act**

**AFLC - Air Force Logistics Command (now AFMC)**

**AFMC - Air Force Materiel Command**

**AFSAC - Air Force Security Assistance Center**

**ALC - Air Logistics Center**

**AMC - Air Mobility Command**

**APU - Auxiliary Power Unit**

**ARB - Award Review Board**

**BAV - Booz Allen Hamilton and VSE Contract Team**

**CLSSA - Cooperative Logistics Supply Support Arrangements**

**CMAL - Controlled Multiple Access Letter**

**CONDEPOT - Contractor Operated Depot**

**CONUS - Continental United States**

**CSIS - Country Standard Item Support**

**DA - Defense Article**

**DAAS - Defense Automatic Addressing System**

**DAMES - Defense Automated Message Exchange System**

**DAO - Defense Accounting Office**

**DCS - Direct Commercial Support**

**DDN - Defense Data Network**

**DIDS - Defense Integrated Data System**

**DIFS - Defense Integrated Financial System**

**DISAM - Defense Institute of Security Assistance Management**

**DLA - Defense Logistics Agency**

**DoD - Department of Defense**

**DSAA - Defense Security Assistance Agency**

**DTS - Defense Transportation System**

**ECM - Electronic Countermeasures**

**EDA - Excess Defense Articles**

**EI - End Item**

**ERRC - Expendability, Recoverability, Repairability, Category**

**FAD - Force Activity Designator**

**FAR - Federal Acquisition Regulation**

**FDO - Fee Determining Officer**

**FLO - Foreign Liaison Officer**

**FMS - Foreign Military Sales**

**FMSO - Foreign Military Sales Order**

**FMSO I - Foreign Military Sales Order No. 1**

**FMSO II - Foreign Military Sales Order No. 2**

**ICP - Inventory Control Point**

**ILCS - International Logistics Communication System**

**ILCO - International Logistics Control Office**

**LAA - Lockheed Aircraft Argentina**

LOA - Letter of Offer and Acceptance

LPIT - Logistics Process Improvement Team

MDE - Major Defense Equipment

MILSTAMP - Military Standard Transportation and Movement Procedure

MILSTRIP - Military Standard Requisitioning and Issue Procedures

MIS - Management Information System

MRO - Maintenance Repair and Overhaul

MSC - Military Sealift Command

MS&S - Marketing Sales and Service

NAD - Northrop Air Division

NIPARS - Nonstandard Item Parts and Repair Support

NISS - Nonstandard Item System Support

NSIS - Nonstandard Item Support

NSN - National Stock Number

OEM - Original Equipment Manufacturer

P&A - Price and Availability

PBI - Peterson Builders Incorporated

P/N - Part Number

POE - Port of Embarkation

PROS - Parts and Repair Ordering System

RSAF - Royal Saudi Air Force

SA - Security Assistance

**SAIC - Science Applications International Corporation**

**SAMIS - Security Assistance Management Information System**

**SCT - Systems Control Technology**

**SME - Significant Military Equipment**

**SOW - Statement of Work**

**STAR/PC - Supply Tracking and Reparable Return/PC**

**UMMIPS - Uniform Military Movement and Issue Priority System**

**UND - Urgency of Need Designator**

**US - United States**

**USG - United States Government**

## Appendix B. Glossary of Terms

**Air Force Security Assistance Center (AFSAC)** - AFSAC, located at WPAFB, Ohio, is responsible for managing FMS programs for the Air Force and is the program manager for PROS.

**Air Logistics Center (ALC)** - One of five Air Force inventory control points that normally fill FMS requisitions. SAMIS will first send Air Force stock numbered orders to the ALCs for possible fill action before passing them to the PROS contractor. The ALCs also serve as the PROS contractor's source for technical data, when needed to procure an item. Each ALC has a focal point assigned to process these data requests.

**Arms Export Control Act (AECA)** - The basic US law providing the authority and general rules for the conduct of foreign military sales and commercial sales of defense articles, defense services, and training. The AECA came into existence with the passage of the Foreign Military Sales Act (FMSA) of 1968. An amendment in the International Security Assistance and Arms Export Control Act of 1976 changed the name of FMSA to the AECA. Published as 22 US code Sec. 2751 et seq.

**Arms Transfers** - Involves the sale, lease, loan, or other transfers of defense articles and defense services such as arms, ammunition, and implements of war, including implements thereof, and the training, manufacturing, licenses, technical assistance, and technical data related thereto, provided by the USG under the authority of the Foreign Assistance Act of 1961, as amended, or Arms Export Control Act, as amended, or statutory authority, or directly by commercial firms to foreign countries foreign private firms, or international organizations.

**Best Vendor** - The vendor who provides the best combination of quality, price and delivery time.

**Blanket Order FMS Case** - An agreement between a foreign customer and the USG for a specific category of items or services (including training) with no definitive listing of items or quantities. The case specifies a dollar ceiling against which orders must be placed.

**Cancellation Rate** - The number of requisitions canceled by the contractor in a quarter, divided by the number of requisitions received in that quarter. This is one of the general performance evaluation areas in the award fee plan.

**Case** - A contractual sales agreement between the United States (US) and an eligible foreign country or international organization documented by a Letter of Offer and Acceptance (LOA) (DD Form 1513). One Foreign Military Sales (FMS) case identifier is

assigned for the purpose of identification, accounting, and data processing for each offer (DD Form 1513).

**Case Manager** - An Air Force individual, usually located in the Air Force Security Assistance Center (AFSAC), with responsibility for an FMS case from receipt of the Letter of Request (LOR) for a Letter of Offer and Acceptance (LOA) through case closure. The case manager has the authority to direct case actions necessary to satisfy case management and purchaser requirements.

**Commercial Sale** - A sale of defense articles made under a Department of State-issued license by US industry directly to a foreign buyer, and which is not administered by DoD through FMS procedures. Also referred to as a *direct commercial sale.*

**Conventional Arms Transfer (CAT)..-** The transfer of nonnuclear weapons, aircraft, equipment, and military services from supplier states to recipient states. The USG views arms transfers as a useful foreign policy instrument to strengthen collective defense arrangements, maintain regional military balances, secure US bases, and compensate for the withdrawal of troops. US arms may be transferred by grants, leases, loans, direct commercial sales, or government-to-government cash sales under FMS.

**Cooperative Logistics Supply Support Arrangements (CLSSA)** - Military logistics support arrangements designed to provide responsive and continuous supply support at the depot level for US-made military materiel possessed by foreign countries and international organizations. The CLSSA is normally the most effective means for providing common repair parts and secondary item support for equipment of US origin which is in allied and friendly country inventories.

**Country Manager** - An Air Force individual, usually located in the Air Force Security Assistance Center (AFSAC), with overall responsibility for all Letters of Offer and Acceptance (LOA) and other Security Assistance (SA) actions for one or more countries or international organizations, or for a given region or area. The country manager may also be a case manager for selected cases, depending on the organizational structure and workload.

**Defense Article (DA)** - As defined in section 644(d), FAA and Section 47(3), AECA, includes any weapon, weapons system, munition, aircraft, vessel, boat, or other implement of war; any property, installation, commodity, material, equipment, supply, or goods used for the purposes of furnishing military assistance or making military sales; any machinery, facility, tool, material, supply, or other item necessary for the manufacture, production, processing, repair, servicing, storage, construction, transportation, operation, or use of any other defense article or any component or part of any articles listed above, but shall not include merchant vessels, or as defined by the Atomic Energy Act of 1954, as amended (42 US Code 2011), source material, by-product material, special nuclear

material, production facilities, utilization facilities, or atomic weapons or articles involving Restricted Data.

**DAASC Automated Message Exchange System (DAMES)** - A fully automated telecommunications system that provides the subscriber with a stand alone, also referred to as a turn-key, telecommunications terminal, or it can be designed to function as a communications front-end processor which is linked to a subscriber's existing telecommunications network.

**Defense Automatic Addressing System (DAAS)** - DAAS is an automated communication system used by DoD logistics activities, FMS customers and contractors. It is headquartered at Gentile AFB, Ohio. The ILCS communication system is a part of DAAS.

**Defense Data Network (DDN)** - A computer-based communications capability for military department and defense agency personnel

**Defense Institute of Security Assistance Management (DISAM)** - The centralized DoD school for the consolidated professional education of personnel involved in security assistance management. DISAM is located at Wright Patterson AFB, Ohio, and provides an array of resident and non-resident instruction for both USG and foreign government military and civilian personnel as well as for defense contractor and industry personnel.

**Defense Integrated Data System (DIDS)** - The central computerized Federal Catalog for all items repetitively stocked, stored, and issued by the federal government. Included in the data base are identifying information, related supply information, and the procedures for using the data base.

**Defense Security Assistance Agency (DSAA)** - The agency that performs administrative management, program planning, and operations functions for US military assistance programs at the DoD level under the policy direction of the Assistant Secretary of Defense (Regional Security Affairs).

**Defense Service** - As defined in Section 644(f), FAA and Section 47(4), AECA, the term defense service includes any service, test, inspection, repair, training, publication, technical or other assistance, or defense information used for the purpose of furnishing military assistance or FMS, but does not include military education and training activities or design and construction services under Section 29, AECA.

**Defense Transportation System (DTS)** - Department of Defense (DoD) transportation resources (air or surface transportation that is owned, operated, controlled, or arranged by DoD). This includes air or surface movement by government bill of lading (GBL) on US flag commercial carriers or by foreign flag carriers when movement is DoD or USAF arranged and shipment remains under DoD or USAF auspices and control.

**Defined Order Case** - These are FMS cases characterized by orders for specific defense articles and services which are separately identified line items on the LOA.

**Depot Level Maintenance** - Maintenance performed on material requiring a major overhaul or a complete rebuilding of parts, assemblies, subassemblies, and end items, including the manufacture of parts, modification, testing, and reclamation as required. Provides more extensive shop facilities and equipment and personnel of higher technical skill than are normally available at the lower levels of maintenance, i.e., organizational and intermediate level maintenance.

**End Item (EI)** - A final combination of end products, component parts, and/or materials which is ready for its intended use, e.g., aircraft, ship, tank, mobile machine shop.

**Excess Defense Articles (EDA)** - Defense articles owned by the USG which are neither procured in anticipation of military assistance or sales requirements, nor procured pursuant to a military assistance or sales order. EDA items are items which are in excess of the Approved Force Acquisition Objective and Approved Force Retention Stock of all DoD components at the time such articles are dropped from inventory by the supplying agency for delivery to countries or international organizations.

**Federal Acquisition Regulation (FAR)** - The Far is the primary regulation for use by federal executive agencies for the acquisition of supplies and services with appropriated funds. The intent of the FAR is to standardize the content, decrease the volume of documents, and to achieve consistency throughout government. The FAR is broader than just contracting and applies to all goods and services. It directs the defense program manager in many ways, including contract award procedures, acquisition planning, warranties, and establishing guidelines for competition. Besides the FAR, each agency has its supplement to describe its own particular way of doing business. The DoD supplement is called DFARS (Defense FAR Supplement).

**Fill Rate** - The number of requisitions filled by the contractor in a quarter, divided by the number of requisitions canceled for that quarter.

**Foreign Liaison Officer (FLO)** - An official representative, either military or civilian, of a foreign government or international organization stationed in the United States to manage or monitor security assistance programs.

**Foreign Military Sales (FMS)** - The selling of military equipment and services to friendly foreign governments and international organizations under the authority of the Foreign Assistance Act of 1961, as amended, and the Arms Export Control Act of 1976, as amended.

**Foreign Military Sales Order (FMSO)** - A term used to describe DD Forms 1513 or LOAs which implement CLSSAs. Two DD Forms 1513/LOAs are written: a FMSO I and FMSO II.

**Foreign Military Sales Order No. 1 (FMSO I)** - Provides for the pipeline capitalization of a cooperative logistics support arrangement, which consists of stocks on hand and replenishment of stocks on order in which the participating country buys equity in the US supply system for support of a specific weapons system. Even though stocks are not moved to a foreign country, delivery (equity) does in fact take place when the country pays for the case.

**Foreign Military Sales Order No. 2 (FMSO II)** - Provides for the replenishment of withdrawals of consumable-type items (repair parts, primarily) from the DoD supply system to include charges for accessorial costs and systems service charge.

**Freight Forwarder (FF)** - The agent designated by an SA customer country to complete or control FMS materiel shipment from CONUS or third countries to the purchaser's destination. This is usually a licensed international broker or freight forwarding agent.

**International Logistics Control Office (ILCO)** - An organization devoted to security assistance. Manages, accounts for and controls all FMS transactions, and ensures a smooth interface between the FMS customer and the service provider. Each military service maintains an ILCO. The Air Force ILCO is AFSAC.

**International Logistics Communication System (ILCS)** - A subsystem of DAAS specializing in FMS business. The PROS contractor uses ILCS text messages to communicate with ALCs, AFSAC managers and FMS customers. Depending on practical considerations, ILCS may also be prescribed as the channel for mechanized communication between the PROS contractor and SAMIS. Alternatively, direct file transfer may be prescribed.

**Inventory Control Point (ICP)** - The organizational element within a DoD system which is assigned responsibility for materiel management of a group of items including such management functions as the computation of requirements, the initiation of procurement or disposal actions, distribution management, and rebuild direction.

**Letter of Offer and Acceptance (LOA)** - The document (DD Form 1513) by which the US Government offers to sell to a foreign government or international organization defense articles and defense services pursuant to the Arms Export Control Act of 1976, as amended. The form lists the items and/or services, estimated costs, the terms and conditions of the sale, and provides for the foreign government's signature to indicate acceptance.

**Maintenance** - The upkeep of property, necessitated by wear and tear, which neither adds to the permanent value of the property nor appreciably prolongs its intended life, but keeps it in efficient operating condition. Normally includes "repair" but in Defense, in the case of real property, is distinguished from repair though being limited to the recurrent day-to-day periodic or scheduled work required to preserve or restore a real-property facility to such condition that it may be effectively utilized for its designated purpose. The term "preventative maintenance" involves deterring something from going wrong; the term "corrective maintenance" involves restoring something to its proper condition.

**Major Defense Equipment (MDE)** - Any item of significant military equipment on the United Sates Munitions List having a nonrecurring research and development cost of more than $50 million or a total production cost of more than $200 million.

**Military Export Sales** - All sales of defense articles and defense services made from US sources to foreign governments, foreign private firms, and international organizations, whether made by the DoD or by US industry directly to a foreign buyer. Such sales fall into two major categories: Foreign Military Sales and Commercial Sales.

**Military Standard Requisitioning and Issue Procedures (MILSTRIP)** - A DoD standard for automated logistics transactions. It defines a variety of records, differentiated by 3-position "Document Identifier" codes (DICs), and codes used to requisition items and report status. Most of the transactions outlined in the data flow derive from MILSTRIP (reference DoD 4000.25-1-M).

**Military Standard Transportation and Movement Procedure (MILSTAMP)** - Uniform and standard transportation data, documentation, and control procedures applicable to all cargo movements in the DTS.

**National Stock Number (NSN)** - A number assigned to each item of supply under the Federal Catalog System. It consists of the 4-digit Federal Supply Class (FSC) and 9-digit National Item Identification Number (NIIN).

**NSN Items** - These items are identified by 15-position national stock numbers in the DoD catalog. Normally, they are items the DoD manages (or once managed) for its own use. The PROS contractor will receive orders for these items on the DIC "A41" transactions. By contrast, there are also part-numbered orders (see "part number items" below). The PROS contract differentiates between stock numbered and part numbered orders.

**Nonstandard Article** - For FMS purposes, a nonstandard article is one that DoD does not manage, either because of an applicable end item has been retired or because it was never purchased for DoD components.

**Nonstandard Item** - An item of supply determined by standardization actions as not authorized for procurement.

**Original Equipment Manufacturer (OEM)** - The OEM is the company which originally manufactured the end item.

**Part Numbered (P/N) Items** - P/N items are items ordered by manufacturer's part number. The PROS contractor receives this type of order on a DIC "A45" transaction (and, occasionally, on a DIC "A42" transaction). The PROS contract calls for special research on these orders, since a P/N often relates to a good NSN. When such a match exists and the NSN is in Air Force stock or is an NSN actively managed by DoD or GSA, the PROS contractor rejects the order back to SAMIS for supply through standard government channels.

**Parts and Repair Ordering System (PROS) Contractor** - This is the contracted organization responsible for satisfying FMS orders and reporting status similar to the way the ALCs do. The PROS contractor receives MILSTRIP requisitions, reports MILSTRIP (and unique) status to SAMIS, supplies the required materiel/service and provides invoices that result in billings to the FMS customer. SAIC is the company that is currently the PROS contractor.

**Price and Availability Data (P&A)** - A response to a foreign government request for preliminary data for the possible purchase of a defense article or service.

**Program Management Office (PMO)** - The office responsible for the monitoring the performance of the PROS program. AFSAC/XM at WPAFB acts as the program manager for PROS.

**PROS Fee** - The sum total of all the fees assessed in processing a PROS order.

**PROS Item** - Items meeting PROS eligibility may consist of any part numbered or national stock numbered item included in government (i.e., D043A - Master Item Identification Data System) or commercial data bases (i.e., Partsmaster or FedLog) that is needed in support of the Security Assistance country's military infrastructure. These requirements, though, will not include requisitions for which residual stock or FMS repair support exists at a DoD/GSA source of supply/repair. Ammunition and explosive portions of cartridge actuated devices and propellant actuated devices (CAD/PAD) will not be passed to PROS without contractor acceptance and the program management office approval. Items with hazardous materials and items containing ozone depleting chemicals (without waiver) are excluded from PROS eligibility.

**Requisition** - An order for materiel or services that defines an SA customer country's requirement, e.g., quantity, stock number.

**Repair and Replace** - For FMS, programs by which eligible CLSSA customers return repairable carcasses to the US and receive a serviceable item without awaiting the normal

repair cycle timeframe. The concept is that replacement involves an exchange of CLSSA customer-owned stocks in the customer's hands and the CLSSA customer-owned stocks in the USG inventory in the US. Countries are initially charged the estimated repair cost, with an adjustment to the actual repair cost upon completion of repair of the carcass.

**Repair and Return** - For FMS, programs by which eligible foreign countries return unserviceable repairable items for entry into the US Military Department repair cycle. Upon completion of repairs, the same item is returned to the country and the actual cost of the repair is billed to the country.

**Requisition Processing Lead Time (RPLT)** - The number of requisitions placed on contract during the quarter within the timeframes identified in the award fee plan, divided by the total number of requisitions placed on contract for the entire quarter.

**Residual Stock** - Retained stock of items which were previously used by DoD.

**Security Assistance (SA)** - A group of programs authorized by the Foreign Assistance Act of 1961, as amended, and the Arms Export Control Act of 1976, as amended, or other related statutes by which the United States provides defense articles, military training, and other defense-related services, by grant, loan, credit, or cash sales in furtherance of national policies and objectives.

**Security Assistance Management Information System (SAMIS)** - SAMIS is the AFSAC system for managing and accounting for FMS orders. SAMIS transmits electronic orders to the PROS contractor, receives status, approves purchases (except where additional customer approval is mandated), accepts invoices and interfaces with the FMS customer. As such, SAMIS acts as the official instrument AFSAC uses to manage the PROS contract.

**Significant military Equipment (SME)** - Those defense articles and services on the US Munitions List in the International Traffic in Arms Regulation (ITAR) which are preceded by an asterisk. SME are articles which require special export controls "because of their capacity for substantial utility in the conduct of military operations."

**Spares/Spare Parts** - An individual part, subassembly, or assembly supplied for the maintenance or repair of systems or equipment.

**Third-Party Provider** - A company that manages the logistics functions for other companies which have traditionally managed those functions in house. For FMS, third-party providers consist of companies on contract by either the OEM, DoD, or the FMS country to manage follow-on logistics support.

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# Vita

Captain Curtis L. Wilken is from Ogden, Utah. He graduated from Weber State University with a Bachelor of Science in Business Management. After receiving his commission into the United States Air Force through the Reserve Officers Training Corps, he was assigned to the Logistics Plans career field and sent to the 1003 Mobile Command and Control Squadron at Peterson Air Force Base. During his tour at Peterson AFB, Captain Wilken served as the Logistics Flight Section Commander.

In 1993, Captain Wilken was assigned to Yokota AB, Japan, where he served nearly two years in the Logistics Plans Flight, serving as War Reserve Materiel Officer, Installation Deployment Officer, Plans Officer, and Flight Chief. While at Yokota AB, Captain Wilken was assigned to the Air Force Institute of Technology at Wright Patterson AFB, Ohio, and graduated in 1996 with a Masters degree in Logistics Management. He was subsequently assigned to the 305th Supply Squadron, McGuire AFB, NJ.

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**13. ABSTRACT (*Maximum 200 Words*)**

This research describes how Foreign Military Sales follow-on support will be provided for in the future based on changes currently taking place in the Department of Defense, Air Force, and industry today. Information on the current system was gathered through a thorough review of the literature. Interviews were used extensively To determine the future plans of industry. In the Department of Defense, outsourcing and privatization, most notably depot privatization will affect the way that follow-on support is provided in the future. Due in large part to shrinking arms sales, private industry is increasing the emphasis placed on providing follow-on support through commercial contracts as a means of generating income and keeping production lines viable. Third-party companies have emerged as an important entity in the follow-on support field, providing specialized support to the Air Force, private industry, and foreign customers. The Air Force and private industry each have their own advantages and disadvantages in providing follow-on support. The findings conclude that follow-on support will be increasingly provided through Air Force outsourcing and privatized programs, and that private industry is seeking to increase its participation in the follow-on support arena.

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